

Environmental Product Declaration

- An environmental declaration according to the objectives of ISO/TR 14025.
- A presentation of the Life Cycle Assessment results (ISO 14040 / 14044) based on the 2010 recommendations of the European Commission.

ENVIRONMENTAL
PRODUCT
DECLARATION

EPD

Product Description

Reply task chair range offers two alternative styles to maximise choice in terms of design and functionality: Reply & Reply Air. The range is designed to provide four major benefits: “customisation”, “comfort”, “simplicity” and “sustainability”.

The model chosen for analysis is the most frequently ordered one (Reply Air, reference 466 160 MT) from the **Reply** range.

Standard features on this model include:

- Synchronised mechanism
- Seat height adjustment
- Height adjustable armrests
- Mesh Backrest : Air
- Seat upholstery: Atlantic
- Tilt tension adjustment
- Multi-position backrest lock
- Castors ø50mm



Manufacturer

Reply is manufactured in Sarrebourg, France, by Steelcase, for the EMEA (Europe, Middle East and Africa) market. It is also manufactured in Grand Rapids, Michigan (USA), 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.

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 (Program for the Endorsement of Forest Certification schemes) certification for five of its production facilities in Europe. The certification acknowledges that the wood used in the products has been sourced from forests managed in a sustainable way. In the USA, Steelcase was given the FSC (Forest Stewardship Council) certification.

To show continuous improvements, Steelcase communicates the environmental performance of its products through voluntary environmental labels and declarations. Sustainability related actions and results are annually communicated in the annual Steelcase Corporate Responsibility report.

For further information see www.steelcase.com

Steelcase

Material Declaration

Reply consists of the materials listed below. The total weight is 17.7 kg including packaging.

Metals	kg	%
Steel	5.254	29.7
Aluminium	0.955	5.4
Brass	0.004	0

Plastics	kg	%
PA6 (30% fibreglass)	4.809	27.2
PP (20% talc)	1.200	6.8
PU foam	0.660	3.7
PA6	0.475	2.7
PP	0.295	1.7
POM	0.287	1.6
PE (textile)	0.136	0.8
LDPE – for packaging	0.134	0.8
PE / PA (textile)	0.090	0.5
PP / Rubber	0.019	0.1
PA66	0.004	0

Other materials	kg	%
Cardboard- for packaging	3.371	19
Rubber	0.005	0

Environmental Product Declaration

The potential environmental impacts of **Reply** (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 / 14044) in June, 2010. This product declaration is valid for the Sarrebourg production site mentioned on page 1.

Those measurements are the starting point for the continuous improvement of our product. Both method and product may have been subject to modifications since then. Different Environmental Product Declarations 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. Benefits of recycled materials are considered.



Production

This stage comprises all production and assembly processes taking place at Steelcase or at their suppliers and sub-suppliers.



Transport

The following transports are considered: transport from sub-suppliers to Steelcase production site, from Steelcase to the EMEA market (Europe, Middle East and Africa) and transport for end-of life treatments.



Use

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



End of life

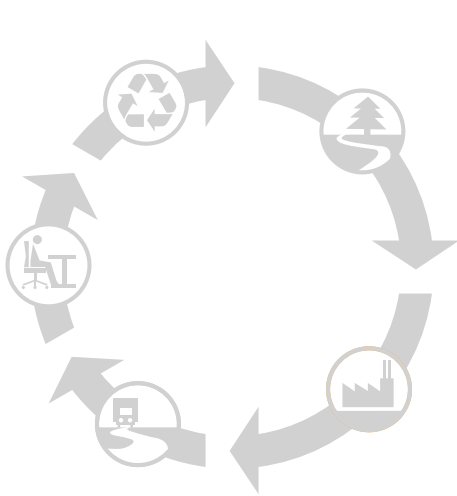
End-of-life products treatments are included: based on current European averages and the specific abilities for disassembly of this product, it was assumed that about 56% of the products are sent to landfill, 32% are incinerated and 12% are recycled at the end of their useful life. Benefits from recycling are considered as neutral to avoid double counting.

Distribution of the environmental impacts for the relevant life cycle stages

Category	Unit	Total	Materials	Production	Transport	Use	End of life
Global warming	[kg CO ₂ -eq.]	101.4	63.7	26.8	4.4	No relevant environmental impacts occur	6.5
Respiratory inorganics	[kg PM2.5-eq.]	0.078	0.053	0.018	0.006	No relevant environmental impacts occur	0.001
Carcinogens	[kg C ₂ H ₃ Cl-eq.]	3.28	2.81	0.36	0.03	No relevant environmental impacts occur	0.08
Terrestrial ecotoxicity	[kg TEG soil]	1 591.4	862.6	542.6	176.8	No relevant environmental impacts occur	9.4
Non renewable energy	[MJ primary]	1 750.9	1 142.2	529.0	73.1	No relevant environmental impacts occur	6.6

Life Cycle Assessment

Environmental impact categories.



Global warming

is due to emissions of greenhouse gases, causing the rise of the global temperature. [kg CO₂-eq.]



Respiratory inorganics

is due to small particles or dust that causes respiratory problems (and death) for humans with asthma or respiratory diseases. [kg PM_{2.5}-eq.]

*Particulate Matter Smaller than 2.5 Micrometers in Diameter



Carcinogens

describes substances or agents which may contribute to cause cancer. [kg C₂H₃Cl-eq.]



Terrestrial ecotoxicity

measures the ecotoxicological factor for terrestrial ecosystems. [kg TEG* soil]

* Triethylene Glycol



Non renewable energy

describes finite resources that will eventually dwindle, becoming too environmentally damaging or too expensive to retrieve. [MJ primary]

Environmental aspects of Reply's life cycle

The contributions of inventory parameters to different impact categories throughout the entire life cycle of **Reply** are listed below.

In each category we considered the three most important inventory parameters.

Category	Inventory parameter*	Inventory value**	Unit	Characterised impact value	Unit
 Global warming	CO ₂	Carbon dioxide, fossil	91 278 g	Total 101 kg CO ₂ -eq. 90 % 4 % 3 %	
	N ₂ O	Dinitrogen monoxide	23 g		
	CH ₄	Methane, fossil	383 g		
 Respiratory inorganics	NO _x	Nitrogen oxides	230.1 g	Total 0.078 kg PM _{2.5} -eq. 37.7 % 36.7 % 24.1 %	
	PM _{2.5}	Particulates < 2.5 µm	28.5 g		
	SO ₂	Sulfur dioxide	239.7 g		
 Carcinogens	HC	Hydrocarbons, aromatic	0.86 g	Total 3.284 kg C ₂ H ₃ Cl-eq. 77.8 % 9.0 % 5.5 %	
	PAH	PAH, polycyclic aromatic hydrocarbons	0.09 g		
		Dioxins, measured as 2,3,7,8-tetrachlorodibenzo-p-dioxin	1.05 x 10 ⁻⁷ g		
 Terrestrial ecotoxicity	Al	Aluminium	3.096 g	Total 1 591 kg TEG soil 34.4 % 32.5 % 14.8 %	
	Zn	Zinc	0.280 g		
	Cu	Copper	0.091 g		
 Non renewable energy		Gas, natural, in ground	16.4 m ³	Total 1 751 MJ primary 37.7 % 28.2 % 15.4 %	
		Oil, crude, in ground	10.8 kg		
		Coal, hard, unspecified, in ground	14.1 kg		

* In each category, we considered the three most important inventory parameters.

** The inventory value represents the total emissions of a substance or resource input.

Additional environmental information

Environmental labels and declarations on products and materials.



This product complies with the French «NF Environnement» environmental certification (ISO 14024) awarded to products that have a reduced effect on the environment.



This product, like the whole Steelcase European seating range, is SCS **Indoor Advantage™** and **Indoor Advantage™ Gold** certified.



A selection of pure wool and polyester fabrics labelled with the **Oeko-Tex 100** Standard is available, guaranteeing that the textile doesn't contain undesirable substances.



A selection of pure wool fabrics labelled with the **European Flower** is available, guaranteeing that the textile meets stringent quality and environmental performance criteria.

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

End of life

Reply is theoretically 98% recyclable by weight. According to the current waste disposal schemes, we assume that 79% can be effectively recycled.

The cardboard and LDPE film used for packaging are 100% recyclable.

Plastic parts are clearly labelled for easy sorting and an effective recycling.

Reply is designed to ensure our clients environmentally responsible after use strategies for their furniture and can be integrated into the Steelcase Environmental Partnership Program.

Use

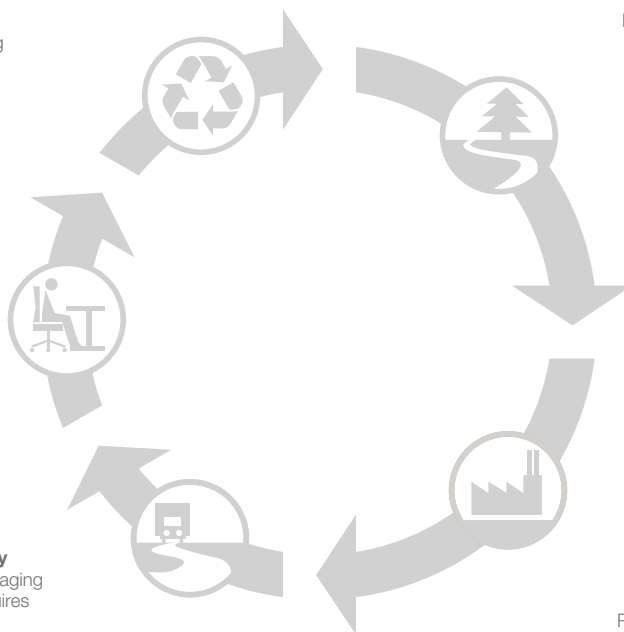
Reply was designed for a long product life, with replaceable parts and textiles that are easy to change.

Our eco-labelled textiles release no toxic substances.

Maintenance information is available in the Steelcase website.

Transport

To minimise packaging weight and volume, **Reply** is delivered in four pieces in an Eco-smart++ packaging which helps us improve filling rates and thus requires less energy for shipping. Compared to a basic packaging, the Eco-smart++ packaging allows a reduction of around 60% of CO₂ eq. emissions for the transportation from Steelcase to the EMEA market.



Materials

Reply contains no CFC or HCFC in the foam and no PVC.

Reply with the plastic base contains 17% recycled materials, by weight (while the version with the aluminium base contains 26% recycled materials).

The packaging consists of 100% recycled cardboard and 30% recycled LDPE film (Low Density Polyethylene).

Paper and packaging have prints with water-based inks i.e. without solvent.

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.

Compilation and Verification Process

- The LCA study of **Reply** (reference 466 160 MT) was carried out by Steelcase, according to ISO 14040 / 14044 and based on a collaboration with Quantis (located in Lausanne, Switzerland and Boston, USA). It was then critically reviewed by Michael Hauschild from the Department of Management Engineering of the DTU (Technical University of Denmark) in Copenhagen.
- The independent verification of the environmental declaration (EPD – ISO/TR 14025) was carried out by the Department of Management Engineering of the DTU (Technical University of Denmark).

References

Related ISO standards

- ISO/TR 14025 Environmental labels and declarations – Type III environmental declarations.
- ISO 14040:2006 Environmental management -- Life cycle assessment -- Principles and framework
- ISO 14044:2006 Environmental management -- Life cycle assessment -- Requirements and guidelines

LCIA method and LCI database

- ILCD HANDBOOK, European Commission, Joint Research Centre, Institute for Environment and Sustainability. ILCD Handbook: General guide for Life Cycle Assessment – Detailed Guidance. European Union, March 2010, 394p.
- IMPACT 2002+ method: JOLLIET, O., MARGNI, M., CHARLES, R., HUMBERT, S., PAYET, J., REBITZER, G. et ROSENBAUM, R. (2003a). IMPACT 2002+: A New Life Cycle Impact Assessment Methodology. International Journal of Life Cycle Assessment 8(6) p.324-330.
- Eco-Invent v2.0 LCI database: Swiss Centre for Life Cycle Inventories, Duebendorf, CH - www.ecoinvent.ch

End-of-life scenario

- Global data: U.S. Environmental Protection Agency (EPA): Office of Solid Waste, 2007 - <http://www.epa.gov/osw/>
- Specific data: Steelcase Inc. Environmental Partnership and Environmental Performance departments, 2009.

Contact

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