# 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.

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# **Product Description**

**Fusion** is a desking family comprising work surfaces, storage, desk organization and cable management. **Fusion** is a platform system that structures the whole office space, no matter what work styles are needed.

**Fusion** is flexible and can be assembled and reconfigured quickly. Its consolidated individual work spaces encourage collaborative working.

The model chosen for analysis is the most frequently ordered one (Fusion ref. 616 000 100) from the Fusion range. It is equipped as follows:

- Top type: Straight/Type 10 Top in Protech
- Top dimensions: L 1600 mm x P 800 mm
- Top edge: Straight edge
- Top colour: snow
- Legs: C leg P 800 mm x H 730 mm
- Structure colour: peal snow
- Cable management with 2 apertures

# Manufacturer

**Fusion** is manufactured by Steelcase in Wisches and Marlenheim (France), 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.

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





# **Material Declaration**

Fusion consists of the materials listed below. The total weight is 35.331 kg including packaging.

Metals	kg	%
Steel	12.683	35.9

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Plastics	kg	%
PP – polypropylene	0.929	2.6
LDPE – low density polyethylene for packaging	0.382	1.1
PE foam – polyethylene for packaging	0.379	1.1
Melamine	0.192	0.5

kg	%
20.118	56.9
0.450	1.3
0.168	0.5
0.030	0.1
	kg 20.118 0.450 0.168 0.030

# **Environmental Product Declaration**

The potential environmental impacts of **Fusion** (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 September 2010. This product declaration is valid for the 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(s), 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 52% of the products are sent to landfill, 42% are incinerated and 6% 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
-00	Global warming	[kg CO <sub>2</sub> -eq.]	71.8	36.2	28.4	4.8	No relevant environmental impacts occur	2.4
	Respiratory inorganics	[kg PM2.5-eq.]	0.083	0.047	0.028	0.007	No relevant environmental impacts occur	0.001
3	Carcinogens	[kg C2H3Cl-eq.]	2.67	2.05	0.49	0.04	No relevant environmental impacts occur	0.09
(¥.)	Terrestrial ecotoxicity	[kg TEG soil]	2351.7	1396.6	788.8	162.3	No relevant environmental impacts occur	4.0
	Non renewable energy	[MJ primary]	1533.3	734.6	713.0	81.7	No relevant environmental impacts occur	4.0

# Life Cycle Assessment

Environmental impact categories.



### **Global warming**

is due to emissions of greenhouse gases, causing the rise of the global temperature. [kg  $\rm CO_2\text{-}eq.]$ 

### **Respiratory inorganics**

is due to small particles or dust that causes respiratory problems (and death) for humans with asthma or respiratory diseases. [kg PM2.5\*-eq.] \*Particulate Matter Smaller than 2.5 Micrometers in Diameter

# Carcinogens

describes substances or agents which may contribute to cause cancer. [kg  $\rm C_2H_3Cl\text{-eq.}]$ 

### **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 Fusion are listed below.

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Category	Inven	tory parameter*	Inventory value** Unit	Characterised impact	value	Unit
Global warmi	ng CO <sub>2</sub> CH <sub>4</sub> CO	Carbon dioxide, fossil Methane, fossil Carbon monoxide, fossil	69 054 g 215 g 443 g	Total	<b>71.8</b> 96.1 2.1 1.0	<b>kg CO<sub>2</sub>-eq.</b> % % %
Respiratory in	norganics PM2.5 NO <sub>x</sub> SO <sub>2</sub>	Particulates < 2.5 µm Nitrogen oxides Sulfur dioxide	41.6 g 195.1 g 198.0 g	Total	<b>0.083</b> 50.3 30.0 18.6	<b>kg PM2.5-eq.</b> % %
Carcinogens	HC Cr	Hydrocarbons, aromatic Dioxins, measured as 2,3,7 tetrachlorodibenzo-p-dioxir Chromium	0.73 g ,8- n 1.88E-07 g 1.23 g	Total	<b>2.67</b> 75.8 12.2 5.6	<b>kg C₂H₃CI-eq.</b> % %
Terrestrial ec	Al Cr Zn	Aluminium Chromium Zinc	5.112 g 1.234 g 0.383 g	Total	<b>2 351.7</b> 36.3 34.8 14.7	kg TEG soil % % %
Non renewab	le energy	Uranium, in ground Gas, natural, in ground Coal, hard, unspecified, in g	0.7 g 9.8 m³ ground 18524.5 g	Total	<b>1 533.3</b> 26.7 25.9 23.1	MJ primary % % %

\* 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 Environmement** environmental certification (ISO 14024) awarded to products that have a reduced effect on the environment.



This product complies with the German **Blauer Engel** environmental certification awarded to products with a low environmental impact.



This product, when made in Europe, is currently going through the **Indoor Advantage** Certification process.



The wooden components of this product are labelled with **PEFC** (Programme for the Endorsement of Forest Certification), ensuring that wood originates from sustainably managed forests.



The particle board of this product complies with the **E1 standard** and with the so told **E0,5**, guaranteeing a much lower level (less than 4 mg / 100 g) of formaldehyde emissions.

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

# End of life

Fusion is theoretically 98% recyclable by weight. According to the current waste disposal schemes, we assume that 41% can be effectively recycled.

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

Fusion is quick and easy to disassemble using normal hand tools. It contains only a few different materials, making sorting for recycling easy. Plastic parts are clearly labelled for easy sorting and an effective recycling.

**Fusion** 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

**Fusion** was designed for a long product life, with replaceable parts.

Maintenance information is available in the Steelcase website.

# Transport

**Fusion** is delivered in only 2 packaging, helping us improve filling rates and thus requiring less energy for shipping.

### Materials

Fusion contains 21% recycled materials, by weight.

The packaging consists of 46% recycled cardboard and 10% recycled LDPE film (Low Density Polvethylene).

> To reduce overall material usage, **Fusion** weighs only 35.331 kg (17% less than Doué, an equivalent Steelcase desk) and is made with a minimum number of different materials (plastic elements of the desk are only made of PP).

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

# Production

The production sites in Wisches and in Marlenheim have ISO 14001 certified environmental management systems.

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.

Glue used to attach edges on the table is water based and releases no VOCs.

# **Compilation and Verification Process**

- The LCA study of **Fusion** (ref. 616 000 100) was carried out by Steelcase, according to ISO 14040 / 14044 and based on previous 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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