Environmental Product Declaration

GORKA
DESIGN **JORGE PENSI**

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Environmental Commitment

Akaba was established in 1986 by three partners who, with more enthusiasm than economic means, decided to get together in order to create a furniture company that had four main goals: design, internationality, corporate image and the creation of new jobs.

AKABA, S.A. is a company sensitive to environmental issues and is consequently committed to comply with different environmental standards. As a result, AKABA S.A. is involved in a continuous process of revision and improvement of the Control and Management of its activities.

The implementation of an environmental management system is a strategic and competitive challenge accepted by our company, resulting from the firm commitment accepted by AKABA S.A. with society to take care of the environment. The main principles of this challenge are:

• To design products and processes that minimize the consumption of raw material and the rational use of resources as well as to re-use or recycle waste.

• To reduce air, water and soil pollution adopting preventive measures to avoid environmental accidents.

• To be aware of and to comply with the Legislation and Regulations related to the environment and that affect the activities of AKABA, S.A.

GORKA Stackable Chair

Product Descri ption

Stackable chair with arms, high-pressure injected aluminium frame, powercoated or mirror polished. Polyamide-6 anatomic shell in one piece, reinforced with fiberglass.

Product Specifications

GORKA stackable chair is composed by the following materials:

Material	Weight (kg)	%
Metal		
Aluminium	3,400	72,42
Steel	1,295	27,58
Plastic		
PE	0,226	8,97
PA	0,060	2,38
PA 6 + 30%	2,200	87,26
Porex	0,035	1,39
Other		
Cardboard	1,496	100,00

NOTE: the functional unit used in this study is that of a chair with 10 years duration, used as a seat.

All these outcomes refer to a product unit, that means the product and its packaging.

Distribution of the Emissions for the Relevant Life Cycle Stages

Atmospheric Emissions

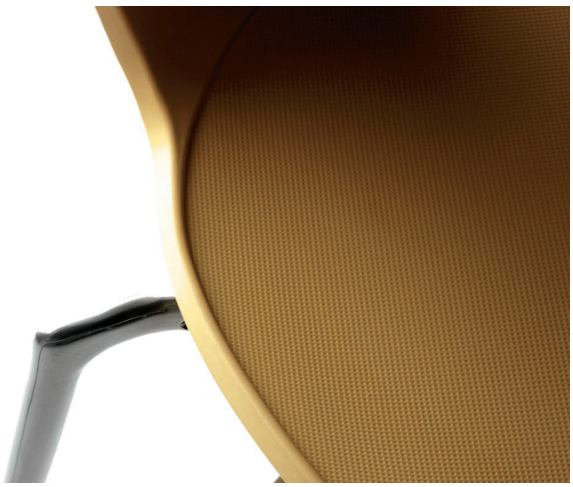
Atmospheric Emissions	Production	Transport	Disposal	Total
Carbon Dioxide (CO_2)	24,04	7,09	-28,54	2,59
Carbon Monoxide (CO)	0,08	0,03	-0,22	-0,12
Nitrous Oxide (N_20)	9,74E-03	8,50E-05	-1,93E-04	9,63E-03
Dioxins	1,46E-10	2,04E-15	7,36E-11	1,54E-10
Hydrofluorocarbons (HFC)	1,33E-03	2,09E-05	-1,76E-03	-4,04E-03
Heavy Metals	4,38E-05	2,17E-05	-4,87E-04	-4,22E-04
Methane (CH_4)	0,11	0,00	-0,06	0,05
Nitrogen Oxides (NO_X)	0,07	0,13	-0,07	0,13
Non-Methane Volatile Organic Compounds (NMVOC)	0,01	0,02	-0,07	-0,04
Sulfur Oxides (SO_X)	0,07	0,01	-0,178	-0,11

Units in Kg.

Water Emissions

Water Emissions	Production	Transport	Disposal	Total
Dioxins	1,93E-12	0,00E+00	0,00E+00	1,93E-12
Nitrates	2,19E-02	3,60E-05	-2,80E-03	1,91E-02
Phosphates	1,47E-04	3,98E-06	-4,56E-04	-3,04E-04
Sulfates	6,47E-02	1,21E-03	-4,21E-02	2,38E-02

Units in Kg.



NOTE: For the GORKA stackable chair's Life Cycle Analysis, we have considered the most representative air and water emissions The Kyoto Protocol treats.

Life Cycle Stages

Production

This stage includes raw materials extraction and transformation, purchased parts, as well as production and assembly processes.

Transport

All the movement of materials and energy in all the life cycle of the product, like transport from suppliers to AKABA's factory in Usurbil, and transport from AKABA to Spanish and Major European markets.

Use

This stage refers to the life of the product from the moment in which it is distributed, until it turns into a waste product. Not relevant environmental exchanges occur during use of the product.

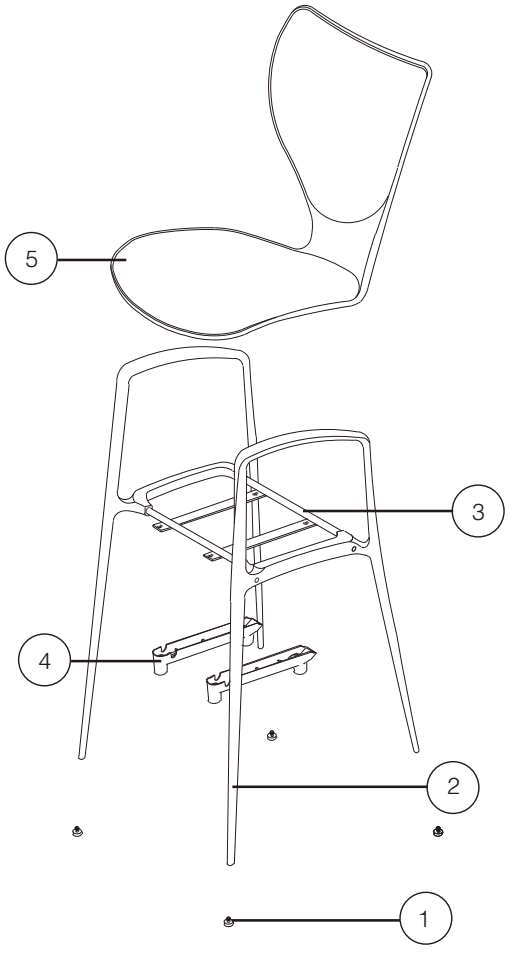
Disposal

Refers to the different ways in which the residuals can be managed and disposed. A product can be landfilled, recycled or incinerated at the end of its useful life.

Waste & Product Recyclability

Waste

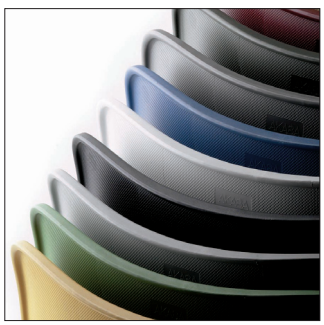
	Component	Material	Weight (kg)	Disposal
GORKA				
1	Floor glides	Polyamide	0,65	Recycling
2	Sides with arms	Aluminium	3,4	Recycling
3	Frame	Steel	1,295	Recycling
4	Stacking glides	PE	0,12	Recycling
5	Shell	Polyamide +30% FV	2,2	Recycling
PACKAGING				
	Packing carton	Cardboard	1,303	Recycling
	Reinforcement	Cardboard	0,192	Recycling
	Plastic bag	PE	0,05625	Recycling
	Strip Reinforcement	PE	0,01	Recycling
	Mesh Reinforcement	PE	0,04	Recycling
	Protection blocks	Porex	0,035	Recycling



Dismantle and unpackaging instructions

Dismantling GORKA is easy and can be done with common hand tools such as screwdrivers, allen screws, etc.

Recyclability percentage



Polyamide GORKA is

99%

recyclable

Distribution of the Environmental Impact Categories for the Relevant Life Cycle Stages

For evaluating the impact of the GORKA's life cycle, we used the calculating CML baseline2000 Method, developed by the Environmental Studies Centre (CML) at Leiden University, Holland.

Environmental Impact Categories Assessment

Impact Categories	Units	Production	Transport	Disposal	Total
Global Warming	kg CO2 eq	31,47	7,27	-34,33	4,41
Ozone Layer Depletion	kg CFC-11 eq	6,92E-06	3,05E-06	-1,32E-05	-3,27E-06
Acidification	kg SO2 eq	0,15	0,13	-0,25	0,03
Eutrophication	kg PO4 eq	0,02	0,02	-0,01	0,02
Photochemical ozone	kg C2H4	0,01	0,0	-0,01	0,00
Abiotic Depletion	kg Sb eq	0,25	0,05	-0,24	0,06

Considered Environmental Impact Categories

Global Warming, GWP

Some of the gases in the earth's atmosphere (in particular water vapour and carbon dioxide) have an ability to absorb infrared radiation. They do not prevent sunlight reaching the earth's surface, but they do trap some of the infrared radiation emitted back into space causing an increase in the surface temperature. Global Warming Potential, GWP100, translates the quantity of emission of gases into a common measure to compare their contributions - relative to carbon dioxide - to the absorption of infrared radiation in 100 years perspective.

Ozone Layer Depletion

Ozone forms a layer in the stratosphere protecting plants and animals from much of the sun's harmful UV-radiation. The ozone levels have declined as a consequence of CFCs and halons released into the atmosphere. A depletion of the ozone layer will increase the UV-radiation at ground level. Ozone depletion potential translates the quantity of emission of gases into a common measure to compare their contributions - relative to CFC-11 (a Freon) - to the breakdown of the ozone layer.

Acidification

Acidification originates from the emissions of sulphur dioxide and oxides of nitrogen. In the atmosphere, these oxides react with water vapour and form acids which sub¬sequently fall down to the earth in the form of rain or snow, or as dry depositions. Acidification potential translates the quantity of emission of substances into a common measure to compare their contributions to the capacity to release hydrogen ions.

Eutrophication

Nutrients (mainly nitrogen and phosphorus) from sewage outfalls and fertilised farmland accelerate the growth of algae and other vegetation in water. The degradation of organic material consumes oxygen resulting in oxygen deficiency and fish kill. Eutro¬phication translates the quantity of emission of substances into a common measure expressed as the oxygen required for the degradation of dead biomass.

Pfotochemical Ozone

Photochemical ozone or ground level ozone is formed by the reaction of volatile or¬ganic compounds and nitrogen oxides in the presence of heat and sunlight. Ground-level ozone forms readily in the atmosphere, usually during hot summer weather. Photochemical ozone creation potential translates the quantity of emission of gases into a common measure to compare their contributions - relative to ethylene - to the formation of photochemical oxidants.

Abiotic Depletion

Is the depletion of non-renewable resources such as oil, coal and retails due to their extraction and consumption. This category includes abiotic resources and energy.

General Environmental Information

- All plastics used are PP, PA 6, PE and PS, all classified as non hazardous. Also, the plastic parts that exceed more than 50 gr are marked so that they can be easily re-used or recycled, except where limited by shape of the components
- No chemical product is used that can cause harm in the workplace.
- The paint used is in powder, free of paint thinner.
- The painting process is done in a closed circuit automated installation which reduces water consumption and the release of powder into the atmosphere to a minimun.
- Wood is varnished in front of a waste absorbing wall constantly covered with water.
- No use of exotic wood, imported or endangered.
- All paper, cardboard, plastic and metallic waste is recycled.
- All hazardous waste is classified and sent to authorized waste dealers.

Bibliography & References

- Norma UNE 150025 IN: Etiquetas ecológicas y declaraciones medioambientales. Declaraciones ambientales Tipo III. February 2003. Equivalent to ISO/TR 14025:2000.
- Norma UNE-EN ISO 11469: " Plásticos. Identificacion genérica y marcado de productos plásticos." May 2001
- Requirements for Environmental Product Declarations, EPD, (MSR 1999:2) published by the Swedish Environmental Management Council at www.environdec.com
- PCR for preparing an environmental declaration for Seating, prepared by Lars Thortveit and Christofer Skaar at the Norwegian University of Science and Technology in accordance with ISO/CD 14025 and the Norwegian adaptation of this standard (NEPD 2004)

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