

enea



Environmental Memory- BIO / BIO L

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1. General information

Product: BIO / BIO L

Designer: JOSEP LLUSCÁ

2. Enea with the environment

ENEAD started in 1984 focused to manufacture and market contemporary design furniture. During all these years it had an excellent evolution, with an important presence in the world market furnishing lots of unique buildings in the hands of renowned architects.

The company, in the manufacture of its products, shows its concern for the natural environment through a philosophy of design and production where the following environmental criteria are taken into account:

- **Simplicity:** during the design process seeks to minimize the number of components, achieving a perfect interplay between them.
- **Recycling and reuse:** design seeks the use of recyclable and recycled materials for their manufacture, as well as easy removal that would facilitate the recycling and reuse.
- **Use of non-dangerous materials:** ENEAD also works to reduce and replace the use of dangerous materials or negative for the environment. For example, using epoxy paints that are free from solvents and compounds volatile organic harmful.

ENEAD uses a few production processes of high technology, in addition to an intense process of research and adaptation of materials to the needs of use. Various processes have been submitted from the beginning to a rigorous policy of quality, what has led to the company to be one of the first Spanish companies, manufacturers of furniture design, in obtaining the **ISO 9001 quality certification** and certificate of the **system of management of ecodesign**, awarded by AENOR, complies with the **UNE-EN ISO 14.006** and the certificate of the system of environmental management according to the **quality certification UNE-EN ISO 14001**.

All these processes, controls and selection of materials, guarantee the high quality of the products of ENEAD, both in strength and durability as its finish, but with the commitment to achieve all this, taking into account the environment, framed within sustainable development. The objective is always meet current needs without compromising future resources.

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3. BIO / BIO L, aspects of environmental innovation.

The Bio chair created and designed from a steel tube structure, painted or chrome integrates perfectly with the seat and backrest. Tough and stylish, includes among its main features, the comfort of its seat and the effectiveness of its forms. It is also lightweight and stackable and thus ideal for contract spaces that require multiple use of seats. Taking advantage of the Bio lines, establishing the **Bio L** a version with a longer backrest suitable for meeting rooms.

Two chairs born under one premise:

easily to integrate into any space that needs more personality. Betting for the comfort on the contract spaces, both the Bio chair and the Bio L chair are designed so that can incorporate a writing tablet, also have a linker system designed especially for creating fixed rows of chairs in schools, auditoriums or conference rooms. Both the seat and backrest can combine materials and finishes. We can find in recyclable polypropylene, upholstered in 100% cotton, polyester or new wool.

During the process of design, production, editing and marketing of BIO / BIO L tried to minimize the number of components in the seat, as well as reduce and replace the use of dangerous materials or negative environment.

3.1. Product specifications

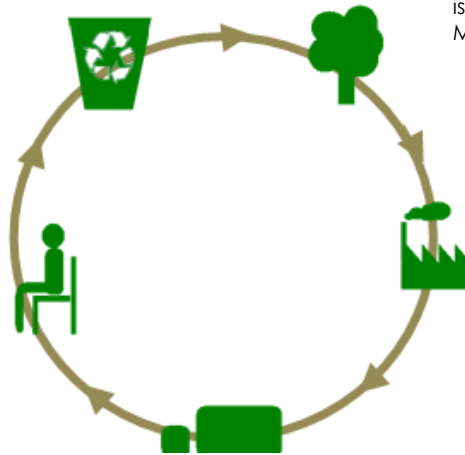
MATERIAL		Kg.	%
CHAIR	Steel	1.704	40.14
	Aluminium	0.410	9.66
	Polyethylene	0.011	0.26
	Polypropilene	2.115	49.82
	Polyamide	0.005	0.12
PACKING	Polyethylene	0.150	5.42
	Card board	2.620	94.58

3.2. BIO / BIO L life's cycle.

At the end of life stage referred to different final destinations of the materials that make up the product.

This phase takes into account the transport of materials from their place of origin and have suffered some kind of transformation. For the calculation is included in the phase of MANUFACTURE.

In the phase of use does not need any special maintenance, clean with soap and water, and estimating the useful life of a chair of this type in 10 years, these materials will be negligible compared to the other in the Analysis of the Life Cycle, so it is not included the use phase in LCA.



At this stage are recorded the Transformation that take place in the purchased raw materials to give rise to the product that ENEA offers.

This phase takes into account both packing needed to transport the product as the transport of the product itself. For the calculation is divided in two stages PACKING and TRANSPORT.

3.3. Environmental impacts.

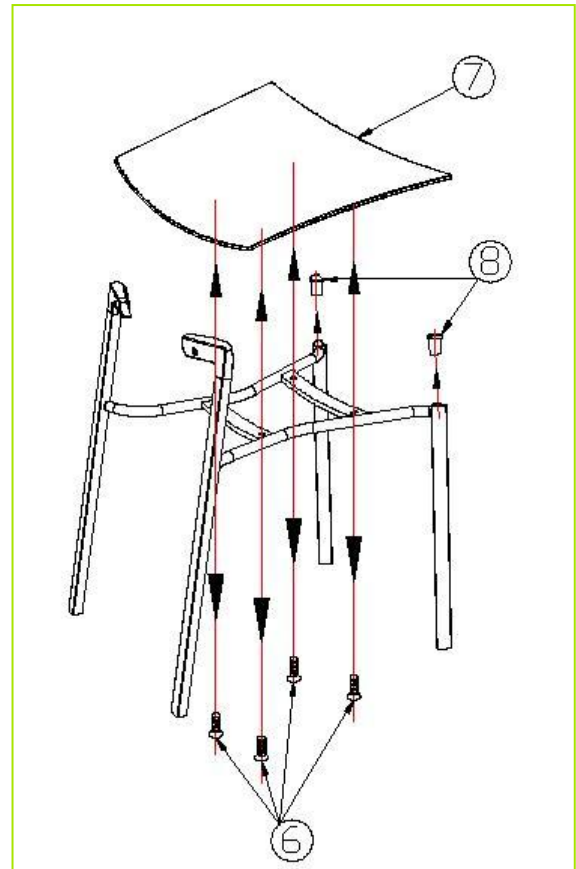
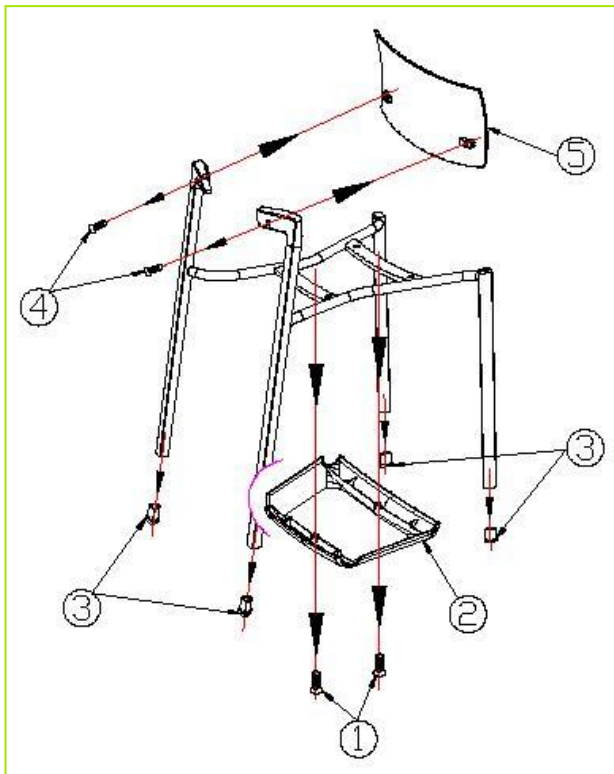
Enea uses environmental software LCAManager, which allows obtaining values for different categories of environmental impacts using various methodologies.

In **BIO / BIO L**, we have calculated values for impacts according to the methodology

- **CML2011:** Impact calculation methodology developed by the Centre of environmental sciences of the University of Leiden-Holanda..
- **Ecoidicator95:** Dutch Ecodesign methodology defined PRE CONSULTANTS. Provides unique value added categories of environmental impact (Goedkoop, 1995).
- **Ecoidicator99:** Dutch ecodesign methodology defined PRE CONSULTANTS. Provides unique value added categories of environmental impact (Goedkoop and Spiensmaa, 1999).

Category	Methodology	Total Value
Climate change (kg CO2 eq.)	CML 2001	2.06E1
Acidification (kg SO2 eq.)	CML 2001	2.61E-6
Destruction layer ozone (kg CFC-11 eq.)	CML 2001	8.16E-2
Photochemical oxidants (kg ethylene eq.)	CML 2001	5.20E-3
Eutrophication (kg NOx eq.)	CML 2001	5.23E-2
TOTAL (points)	Eco indic.99	1,98E-06
Climate change 20 years (kg CO2 eq.) 20 years	IPCC	4,065013501
Climate change 100 years (kg CO2 eq.) 100 years	IPCC	4,225762615
Climate change 500 years (kg CO2 eq.) 500 years	IPCC	4,231737967

3.4. Instructions for end-of-life of the product



COMPONENT	MATERIAL	TARGET OF END OF LIFE
1	Zinc plated Steel	Recycable
2	Polypropilene	Recycable
3	Polyethylene	Recycable
4	Zinc plated Steel	Recycable
5	Polypropilene	Recycable
6	Zinc plated Steel	Recycable
7	Polypropilene	Recycable
8	Polyethylene	Recycable

3.5. Additional environmental information

- The product is suitable for reuse.
- The foams have not been manufactured with CFC or HCFC
- All plastic parts weighing more than 50g are marked according to ISO 11469 facilitating their classification for recycling.
- ENEA guarantees the availability of pieces at least 5 years, which avoids their removal and allows you to continue to use with minimal impact when compared with the manufacturing of a new chair.
- The 100% of the steel used is recycled.
- Approximately 10 percent of the plastic used is recycled.
- The materials used are 100% recyclable at the end of its useful life.
- The packaging is made of easily separable materials.
- The paints and lacquers used do not contain aromatic solvents or carcinogenic substances harmful to the reproductive system, mutagenic, toxic or allergenic according to Directive 1999/45/EC.
- The used plastic items do not contain heavy metals and phosphates.
- The waste generated is removed by authorized waste management enterprises.



Eco-design criteria

Diseño Design for the expansion of functions, multifunctionality, modularity and stackable, despite its apparent simplicity.



Design for reuse and recycling, ensuring easy removal and the use of recyclable and recycled materials.

Design for the reduction of use of materials, specially dangerous for human health and the environment.

