

Environmental Product Declaration



In accordance with ISO 14025 and Product Category Rules for Furniture

Veneered Chipboard Cabinet

from

Ballingslöv®

Programme:	The International EPD® System, www.environdec.com
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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



Environmental Product Declarations (EPD) present transparent, verified and comparable information about the life-cycle environmental impact of products.

The International EPD® System is a global program for environmental declarations based on ISO 14025 and EN 15804. Our online database currently contains more than 1100 EPDs for a wide range of product categories by organisations in 45 countries.

Company information

Owner of the EPD: Ballingslöv AB

Contact: Fredrik Nyberg

Description of the organisation: Ballingslöv AB is one of the major actors in Scandinavia in terms of kitchen, bathroom and storage solutions. The Ballingslöv brand has a prominent position and is known for its high quality, exclusive look and fine design as well as for offering one of the most flexible selections in the market.

Good market coverage is achieved by having more than 200 retailers across Sweden, Norway and Denmark. Ballingslöv was founded 1929 and have 450 employees. Ballingslöv's vision is to be the obvious choice for conscious customers within kitchen, bathroom and storage. The core values are inspiration, quality, sustainability and everyday joy

Product-related or management system-related certifications: Ballingslöv are convinced that sustainability performance will be an important aspect for reaching their vision. During 2018 the group formulated a sustainability strategy with related targets, aimed at improving ethical, social and environmental performance.

The manufacturing is certified according to:

- ISO 9001: Kvalitetstandard
- ISO 14001: Miljöledningssystem

Product information Veneered Chipboard Cabinet

A cabinet is the structure in which the doors and drawers are installed. The core of the cabinet is made of chipboard with a veneer surface. The standard cabinet has two sides, two shelves and a top in accordance to Figure 1 below.

The hinges and doors are not part of the cabinet.

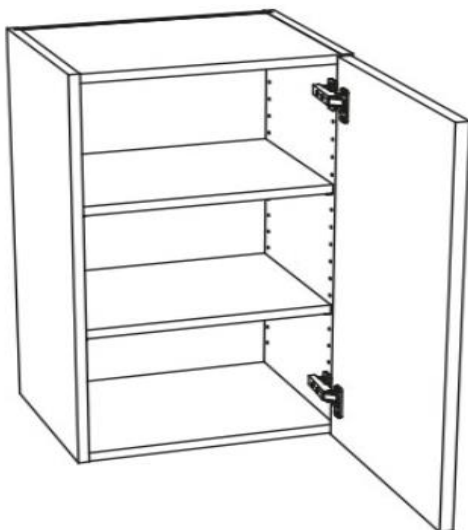


Figure 1, shows a picture of the upper cabinet made of chipboard with a veneer surface.

LCA information

Functional Unit	The functional unit is 1 piece of cabinet used 20 years. The total weight is 14kg.
Product group classification	UN CPC 38130
Goal and Scope	<p>The result will be used to understand where the environmental burden for the products occurs during the life cycle and aims to lay a road map for development to decrease this burden. The result will be communicated by the International EPD system.</p> <p>The audience is resellers and end-clients.</p>
Manufacturing Site	Ballingslöv, Sweden.
Geographical Area	Europe
Compliant with	<p>This EPD follow the "Book-keeping" LCA approach which is defined as attributional LCA in the ISO 14040 standard.</p> <p>In accordance with ISO 14025, ISO 14040 – ISO 14044.</p> <p>This EPD follow the Product Category Rules Furniture, Except seats and mattresses 2012:19 version 2.01 valid until 2023-06-17</p>
Cut-Off Rules	<p>The following procedure is followed for the exclusion of inputs and output:</p> <ul style="list-style-type: none"> - In the case of insufficient input data or data gaps for a unit process, the cut-off criterion is 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass input to that unit process. - The maximum neglected input flows per declared module (A1 - A3) is 5 % of energy usage and mass. <p>No cut-offs of input material have been made.</p>
Background Data	<p>The data quality is considered good. All site-specific data for raw materials, auxiliary materials as well as energy and emissions in the manufacturing process is from 2019 and have been represented with ecoinvent datasets. All other relevant environmental aspects have been represented by generic ecoinvent data.</p> <p>ecoinvent is the world's biggest LCI (Life cycle inventory) data library and the latest and most updates version was used. ecoinvent contain data for the specific geographical regions relevant for this study.</p> <p>The background data from ecoinvent 3.5 are from 2016-2019</p>
Electricity data	Electricity consumption in A3 module comes from GoO (Guarantee of Origin) certified renewable energy represented by wind power.
Allocations	<p>Polluter Pays / Allocation by Classification</p> <p>Two allocation rules are applied:</p> <ol style="list-style-type: none"> 1) the raw material necessary for the manufacture is allocated by mass of the declared unit 2) the energy necessary for the manufacture is allocated in MJ by production of the declared unit
Impact Assessment methods	<p>Potential environmental impacts are calculated with Environmental Footprint 2.0 method as implemented in SimaPro 9.0.</p> <p>Resource use values are calculated from Cumulative Energy Demand V1.11.</p>
Based on LCA Report	Miljögiraff LCA Report 684 Ballingslöv.
LCA Practitioner	Pär Lindman, Miljögiraff AB
Software	SimaPro 9.0

System boundary

The EPD follow Cradle to grave (A1–C4) boundaries. A1 and A2 is defined as upstream, A3 is core and the rest is defined as downstream. See figure 2 below for information about included modules.

Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
Raw materials	Transport	Manufacturing	Transport	Construction-Installation	Use stage	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	Transport	Waste processing	Disposal	Reuse-recovery-recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	NR	NR	NR	NR	NR	NR	NR	NR	NR	X	X	X	MND

X= included in the LCA, NR = module without environmental aspects MND= Module Not Declared.

Figure 2, show the modules included in the system boundary.

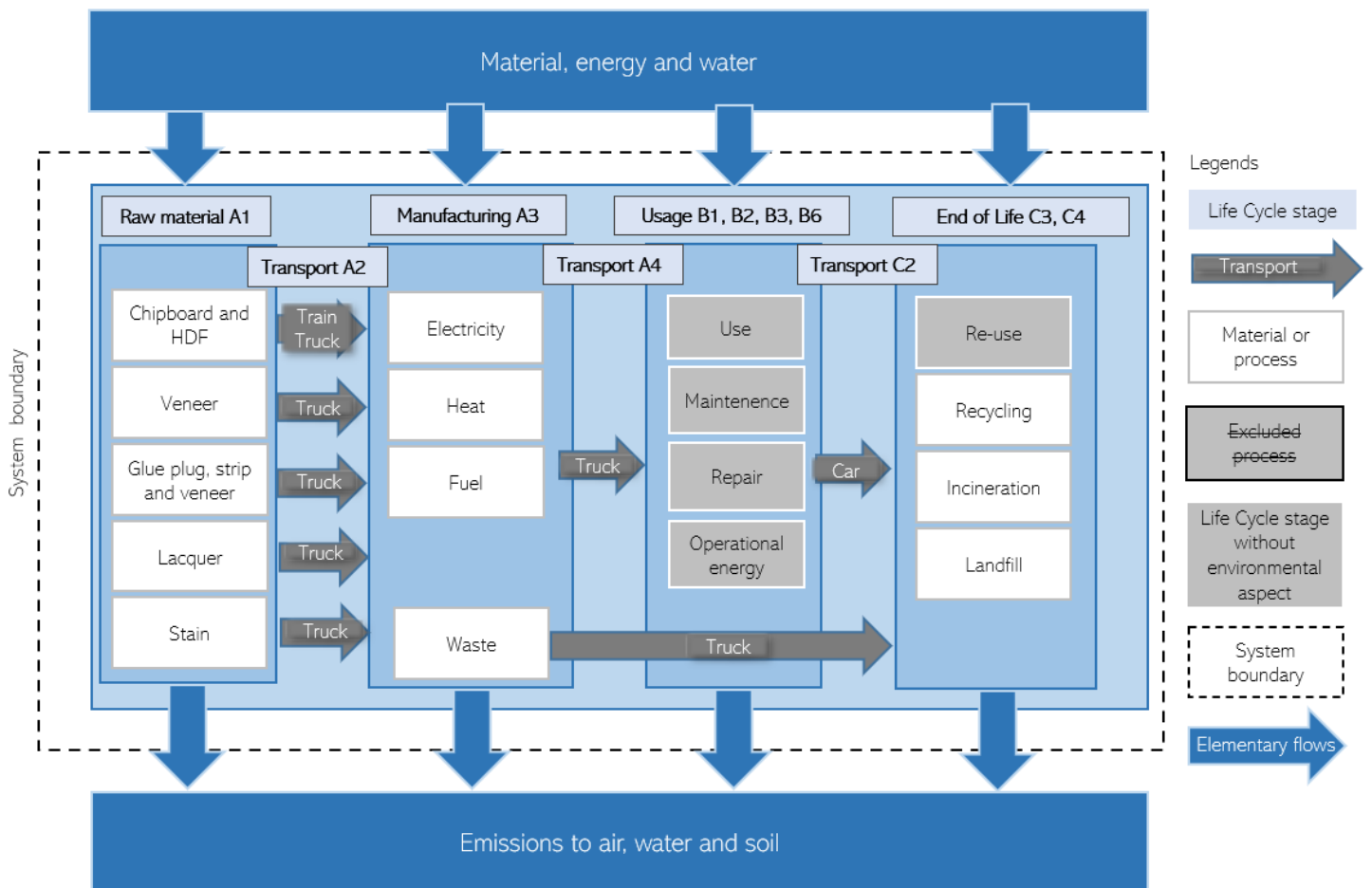


Figure 3, show what is included in the different modules

Content information

The **raw material** of the cabinet can be seen in Table 1

Table 1, show the material content of the cabinet and the percentage of recycled raw material.

Product components	Weight, kg	Post-consumer material, weight-%
Chipboard	11,5	20
HDF	0,91	20
Veneer	1,20	0
Glue to Veneer	0,18	0
Lacquer	0,10	0
Solid Wood	0,07	0
Glue for plug	0,03	0
Glue for strip	0,03	0
Stain	0,00014	0
Total	14	17,7

In total the chipboard-based material stand for 88,5% of the total material weight. The chipboard is produced in Germany. The cellulose fibre in the chipboard consist of 80% fresh hardwood and softwood and 20% from recycled timber and wood residue. The type of chipboard is especially developed to emit low amount of formaldehyde during usage, and the amount of

formaldehyde emissions is half compared to market standard. The formaldehyde emissions during the lifetime of the chipboard is set to 5ppm.

The wood raw material stands for 85% of the chipboard raw material and 8,4% of different types of formaldehyde-based glue. The rest is mainly water.

The glue is ethyl-vinyl-acetate-based wood glue.

Manufacturing is done in Ballingslöv, Sweden. Manufacturing means wood processing, painting and mounting. The manufacturing process generates 8% waste.

The energy, waste, emissions and consumables have been calculated from the total production per year at Ballingslöv and then allocated to one product based on production of that product. There has also been a distinction if the product is painted or not at Ballingslöv because that generates emissions that can be directly linked to the painted products.

Ballingslöv have certified green electricity according to the GoO (Guarantee of Origin) system.

The finished cabinet is packaged in cardboard and LDPE film before loaded into a truck for delivery to the customer.

It is assumed that there are no environmental aspects during **installation** or **usage** of the product.

As **End-of-Life** a scenario is made based on the experience from Ballingslöv. The scenario sets that in 92% of the cases the cabinet is re-used or re-sold after the FU of 20 years. For the remaining 8% the cabinet is disposed and is modelled to follow the normal Swedish disposal scenario for wood-based products.



Environmental Information

Potential environmental impact result per functional unit

Indicator	Unit	Upstream	Core	Downstream	Total
GWP-fossil	kg CO ₂ eq.	8,16E+00	4,02E-01	1,47E+00	1,00E+01
GWP-biogenic	kg CO ₂ eq.	7,40E-02	6,54E-04	2,40E-03	7,71E-02
GWP-luluc	kg CO ₂ eq.	5,29E-02	2,64E-04	9,39E-04	5,41E-02
GWP-total	kg CO ₂ eq.	8,29E+00	4,03E-01	1,47E+00	1,02E+01
AP	kg SO ₂ eq.	4,90E-02	5,14E-03	6,29E-03	6,04E-02
EP-freshwater	kg PO ₄ ³⁻ eq.	3,69E-03	4,57E-05	1,47E-04	3,88E-03
POCP	kg NMVOC eq.	4,70E-02	2,15E-03	5,11E-03	5,42E-02
ADP-minerals&metals*	kg Sb eq.	1,45E-06	1,32E-08	4,03E-08	1,50E-06
ADP-fossil*	MJ	1,47E+02	2,59E+01	2,68E+01	1,99E+02
WDP	m ³	7,46E+00	1,53E-01	4,87E-01	8,10E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption				

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Waste generation

Impact category	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	0	0,031	0	0,031
Non-hazardous waste disposed	kg	0	0,22	0,99	1,21
Radioactive waste disposed	kg	0	0	0	0

Use of resources

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Used as energy carrier	MJ, net calorific value	141	32,6	4,2	178
	Used as raw materials	MJ, net calorific value	245	0	0	245
	TOTAL	MJ, net calorific value	386	32,6	4,2	422,8
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	115	27,5	28,6	171
	Used as raw materials	MJ, net calorific value	44,1	0	0	44,1
	TOTAL	MJ, net calorific value	159	27,5	28,6	215
Secondary material		kg	2,48	0	0	4,73
Renewable secondary fuels		MJ, net calorific value	0	0	0	0
Non-renewable secondary fuels		MJ, net calorific value	0	0	0	0
Net use of fresh water		m ³	0,025	0,0008	0,005	0,038

Output flows

Impact category	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0	0	12,9	12,9
Material for recycling	kg	0	0	0	0
Materials for energy recovery	kg	0	0,25	1,1	1,35
Energy recovery	MJ	0	0	0	0


Other environmental indicators

Impact category	Unit	Upstream	Core	Downstream	Total
Human toxicity, cancer impacts	cases	5,64E-08	9,10E-08	5,10E-07	6,57E-07
Human toxicity, non-cancer impacts	cases	2,58E-07	4,75E-07	3,22E-06	3,96E-06
Fresh water ecotoxicity	PAF.m3.day	3,66E+03	2,42E+04	4,21E+04	7,00E+04
Land use	species.yr	2,15E-09	1,99E-09	1,13E-07	1,17E-07

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Product Category Rules Furniture, Except seats and mattresses 2012:19 version 2.01 valid until 2023-06-17	
PCR review was conducted by: PCR Committee: Arper PsA Srl Moderator: Leo Breedveld, 2B Srl	
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification	
Third party verifier: Hüdai Kara, at Metsims. Individual verifier approved by The International EPD® System	
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programs may not be comparable.

References

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- EN ISO 14025:2014-02 Environmental labels and declarations - Type III environmental declarations - Principles and procedures, Edited in 2010
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- ILCD International guide for life-cycle data system. General guide for life cycle assessment – Detailed guidance, 2010
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