

ENVIRONMENTAL PRODUCT DECLARATION

GINGER

EPD Program: International EPD System (www.environdec.com)

Programme operator: EPD International AB

Reference GPI: General Programme Instructions IES v.3.0

Reference PCR: PCR 2012:19 v1.2 "Other Furniture" CPC Code: 3812 & 3814

Publication date: 2019-01-18

Valid until: 2021-12-13

Registration number: S-P-01496



THE INTERNATIONAL EPD® SYSTEM



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THE COMPANY AND THE PRODUCT

Arper's ecodesign programme aims at the reduction of its products' environmental impact, improve technical performances and fulfill its engagement towards the environment. Arper already obtained for some of its products the EPD certification and continues working on EPD certifications for the most representative collections of Arper.

ARPER

Arper manufactures chairs, tables and furnishing accessories. Arper's approach is relationship oriented, and it translates into a design aimed at aesthetics and usability; from a global, innovative and personalized perspective; in the valorisation of local contexts within the internationalization strategies; in organizational policies always based on transparency and the preservation of a solid and coherent brand identity.

Arper values the importance of environmental sustainability and it is characterized by an increasing commitment in this area: in 2006, ISO 14001 environmental management system was adopted, in 2007, the use of the LCA tool was introduced. Through LCA Arper obtained the EPD (Environmental Product Declaration), an ecolabel that requires the implementation of an LCA study and compliance with a set of pre established requirements, defined by product category (Product Category Rules). Arper obtained the first EPD certifications for Catifa 46 and Catifa 53 in 2008. In 2018 Arper obtained the EPD process certification.

PRODUCT DESCRIPTION

Ginger is a table designed for both indoor and outdoor use. It features a polypropylene top and a four-way base made out of aluminium. It is available in three heights (50, 74 and 105 cm - 19 5/8", 26 1/8" and 41 3/8") with both round and square polypropylene tops in black or white colours. The four-way base is fabricated in polished or painted aluminium.

This is the EPD relative to Ginger table with a square or round top, white or black colour and polished or painted aluminium base in the three available heights (50, 74 and 105 cm).

This declaration summarises the results for the table with a white square top and painted aluminium base in the three heights. This version is representative for the other models, since its environmental impact is the most similar to the average environmental impact of the 6 tables. Representativeness of the data was verified through sensitivity analysis, where the difference between the values of the indicators of the different Ginger tables does not exceed 10%.

Table 1 lists the materials declaration of Ginger and its packaging.

TABLE 1: MATERIALS OF GINGER WITH SQUARE WHITE TOP AND PAINTED ALUMINIUM BASE



GINGER, SQUARE, WHITE, PAINTED ALUMINIUM BASE		h. 50 cm		h. 74 cm		h. 105 cm	
		Kg	%	kg	%	kg	%
Ginger square, white	PP with glass beads / glass fibre	7.664	77%	7.664	73%	7.664	
	Steel	0.390	4%	0.599	6%	0.870	
	Aluminium	1.886	19%	2.186	21	2.576	
	Paint	0.014	0%	0.018	0	0.023	
	Steel + PP	0.042	0%	0.042	0%	0.042	
	Total	9.995	100%	10.508	100%	11.174	
Packaging x 1	Cardboard	6.592	99%	6.592	99%	6.592	99%
	PE	0.035	1%	0.035	1%	0.035	1%
	Steel	0.023	0%	0.023	0%	0.023	0%
	Paper	0.017	0%	0.017	0%	0.017	0%
	Total	6.677	100%	6.677	100%	6.677	

ENVIRONMENTAL INFORMATION

FUNCTIONAL UNIT

The functional unit is represented by 1 table with a lifetime of 15 years.

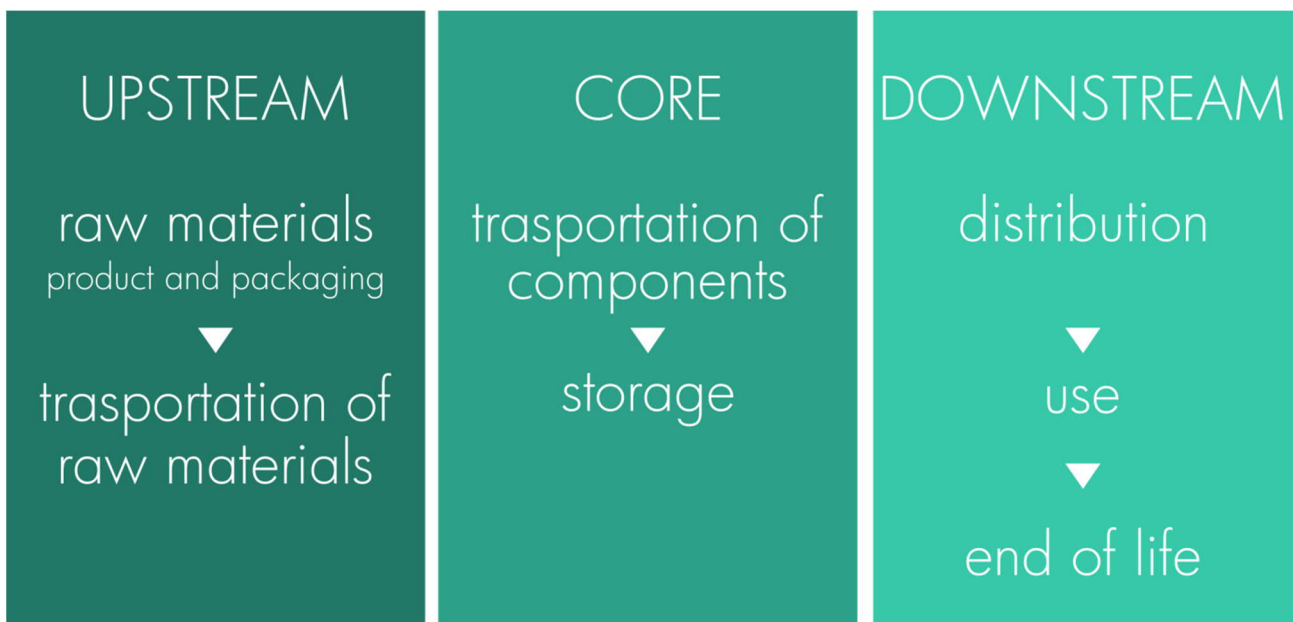
SYSTEM BOUNDARIES

The system boundaries include production of raw materials, production of components and packaging materials, assembly, transport of raw materials and components, storage, distribution, use phase and end of life of the product and its packaging.

Specifically, upstream processes consist of raw materials, their transport, production of the table components, assembly and packaging.

Core processes include transport to the storage warehouse and consumption of electricity and water for storage. The production and assembly of the product are not included in the core processes since Arper does not manufacture or assemble its products internally.

Downstream processes include the distribution of the packed product, use phase and end of life stage of both product and packaging.



TIME BOUNDARIES

Primary data originate from Arper and refer to 2017. Secondary data originate from the ecoinvent v3.4 database (allocation, cut-off by classification) published in 2017.

GEOGRAPHICAL BOUNDARIES

Components and packaging materials are produced in Italy, except for the aluminium base, which is produced in Vietnam and the glass fibre of the bushings, manufactured in Germany. The product is sold both in Italy and abroad. The distribution and end of life scenarios consider the sales figures of the reference year.

BOUNDARIES IN THE LIFE CYCLE

The following processes are excluded from the LCA: infrastructure, building of site, production of manufacturing equipment and personnel activities. For those LCA processes that already contained infrastructure, such as processes from the ecoinvent database, infrastructure has not been excluded.

ALLOCATION RULES

Raw materials and production processes are included for virgin resources. No allocation is made for materials subject to recycling. The recycling process is included for input of recycled resources. Outputs subject to recycling are regarded as inputs to the next life cycle. For the energy and water consumption of the storehouse, volume allocation has been applied.

DATA QUALITY

This LCA study is based on primary data for the fundamental aspects of the study, such as the weight of the packaging components and materials. Primary data have been collected from Arper's suppliers, while generic data originate from the ecoinvent database v3.4.

The LCA calculation has been performed using the LCA software SimaPro 8.5.

The use of proxy data does not exceed the limit of 10% of the impact of the impact categories. All material inputs of the production process have been considered.

The methodology described in the manual about data collection and EPD process has been used for data collection and LCA calculations.

Some ecoinvent v3.4 processes, like the extrusion of steel bars and injection moulding of plastic components have been adapted to the Italian market, to make them more representative. Accordingly, the electricity mix has been changed. The same approach was adopted for the production of the aluminium base. In this case, the Vietnamese electricity mix was selected. Similarly, the German electricity mix was selected for the production of the glass fibre of the bushings. Electricity mixes were taken from the ecoinvent database.

arper

For the main components of the table, primary data relative to the consumption of the different production processes were made available by the supplier. In detail, primary data were made available for the following components: the upper top, the reinforcement plate, the lower top, the base bushing, the plastic screw and the fixing bolt of the top.

In the black version, the top is coated. For the black coating of the upper and lower tops a 35% of primer, and a 40% of polish, was assumed. The energy consumption for the coating process was estimated to be 135 kWh per ton of coated product, based on secondary data. Contribution of the infrastructure was omitted.

Differently from the white version, the packaging of the black version also includes a plastic wrap.

Primary data have been used for product storage, provided by the company responsible for the storage.

For the distribution and disposal of the product, sales data of the year 2017 have been used.

Distribution considers a distance between Arper's headquarters and the capital city of the exporting country. In case of transport by ship, a road transport to cover the distance from Arper's facility to the nearest port, transport by ship to the main port of the destination and a local transport of 100 km by road (truck 16-32 t) have been assumed.

The use phase consists of a consumption of 18 l of hot water and 9 g of soap per table. For soap, a solution with 5% alkylbenzene sulfonate is considered, while a consumption of 1.6 MJ of thermal energy is assumed to heat water.

For the transport of the product and packaging at the end of its life, a road transport (truck 16-32 t EURO 5) of 200 km is assumed. For the end of life scenario, average national data have been used for the countries in which the product is sold.

IMPACT ASSESSMENT

Table 2 until Table 7 show the environmental indicators of Ginger, with white square top and painted aluminium base in the three heights (50, 74, 105 cm). Environmental indicators consist of 8 impact categories (global warming, ozone layer depletion, acidification, photochemical smog, eutrophication, human toxicity, ecotoxicity and land use), material and energy resources (renewable and non renewable), consumption of water and waste. The indicators are broken down into upstream, core and downstream processes.

TABLE 2: GINGER WHITE SQUARE TOP, PAINTED ALUMINIUM BASE h. 50 cm, ENVIRONMENTAL INDICATORS		Units	Total	Upstream	Core	Downstream
Environmental Impact Categories	Global Warming	kg CO ₂ eq	48.3	38.5	0.4	9.4
	Ozone layer depletion	g CFC-11 eq	0.003	0.002	0.000	0.000
	Acidification	kg SO ₂ eq	0.200	0.178	0.002	0.020
	Photochemical oxydation	g C ₂ H ₄ eq	0.012	0.011	0.000	0.001
	Eutrophication	kg PO ₄ ³⁻	0.072	0.053	0.000	0.018
	Human toxicity	CTUh 10 ⁻⁵	18.7	16.4	0.1	2.2
	Ecotoxicity	CTUe 10 ³	2.92	2.63	0.00	0.29
	Land use	species.yr 10 ⁻⁸	17.0	16.4	0.06	0.51
Use of resources	Non-renewable resurces, materials	kg	11.9	7.9	0.2	3.8
	Non-renewable resurces, energy	kg	21.6	20.5	0.1	1.0
	Renewable resurces, materials	kg	1644	1600	4	40
	Renewable resurces, energy	MJ	129	128	1	1
	Secondary resurces, materials	kg	-	-	-	-
	Secondary resurces, energy	kg	-	-	-	-
	Recovered energy	MJ	-	-	-	-
	Total amount of water *	m ³	151	145	2	4
	Direct amount of water used by the core process	l	1.24	0.0	1.24	0.0
Wastes	Hazardous wastes	kg	0.68	0.13	0.00	0.55
	Non-hazardous wastes	kg	6.9	2.4	0.0	4.5
	Materials subject to recycling	kg	10.1	1.0	0.0	9.1

* the total amount of water includes all direct and indirect consumptions of blue water in the system studied. Cooling water is omitted in this calculation.

**TABLE 3: GINGER WHITE SQUARE TOP, PAINTED ALUMINIUM
BASE h. 50 cm, MATERIAL AND ENERGY RESOURCES**

	Units	Total	Upstream	Core	Downstream
Non-renewable resources, materials	kg	11.9	7.9	0.2	3.8
Gravel	kg	8.0	4.1	0.2	3.7
Calcite	kg	1.5	1.4	0.0	0.1
Limestone, unspecified	kg	0.9	0.9	0.0	0.0
Other*	kg	1.5	1.5	0.0	0.0
Non-renewable resources, energy	kg	21.6	20.5	0.1	1.0
Oil, crude	kg	9.0	8.1	0.1	0.8
Gas, natural / m3	kg	5.5	5.4	0.0	0.1
Coal, hard	kg	5.3	5.1	0.0	0.1
Coal, brown	kg	1.8	1.8	0.0	0.0
Other*	kg	0.0	0.0	0.0	0.0
Renewable resources, materials	t	1.6	1.6	0.0	0.0
Water, RS	t	0.9	0.9	0.0	0.0
Water, GR	t	0.5	0.5	0.0	0.0
Water, IR	t	0.2	0.2	0.0	0.0
Other*	t	0.1	0.1	0.0	0.0
Renewable resources, energy	MJ	129	128	0.5	1.0
Energy, gross calorific value, in biomass	MJ	98.7	98.4	0.1	0.2
Energy, potential, hydropower	MJ	25.3	24.3	0.3	0.6
Other*	MJ	5.3	5.1	0.1	0.1

* resources with a contribution lower than 5 %.

TABLE 4: GINGER WHITE SQUARE TOP, PAINTED ALUMINIUM BASE h. 74 cm, ENVIRONMENTAL INDICATORS		Units	Total	Upstream	Core	Downstream
Environmental Impact Categories	Global Warming	kg CO ₂ eq	50.6	40.7	0.4	9.5
	Ozone layer depletion	g CFC-11 eq	0.003	0.002	0.000	0.000
	Acidification	kg SO ₂ eq	0.212	0.190	0.002	0.020
	Photochemical oxydation	g C ₂ H ₄ eq	0.013	0.011	0.000	0.001
	Eutrophication	kg PO ₄ ³⁻	0.076	0.057	0.000	0.018
	Human toxicity	CTUh 10 ⁻⁵	21.1	18.8	0.1	2.3
	Ecotoxicity	CTUe 10 ³	3.35	3.04	0.00	0.30
	Land use	species.yr 10 ⁻⁸	17.2	16.6	0.06	0.53
Use of resources	Non-renewable resurces, materials	kg	12.7	8.6	0.2	3.9
	Non-renewable resurces, energy	kg	22.6	21.4	0.1	1.0
	Renewable resurces, materials	kg	1717	1672	4	41
	Renewable resurces, energy	MJ	132	131	1	1
	Secondary resurces, materials	kg	-	-	-	-
	Secondary resurces, energy	kg	-	-	-	-
	Recovered energy	MJ	-	-	-	-
	Total amount of water *	m ³	165	159	2	5
Direct amount of water used by the core process		l	1.24	0.0	1.24	0.0
Wastes	Hazardous wastes	kg	0.72	0.14	0.00	0.58
	Non-hazardous wastes	kg	7.3	2.8	0.0	4.5
	Materials subject to recycling	kg	10.4	1.0	0.0	9.4

* the total amount of water includes all direct and indirect consumptions of blue water in the system studied. Cooling water is omitted in this calculation.

**TABLE 5: GINGER WHITE SQUARE TOP, PAINTED ALUMINIUM
BASE h. 74 cm, MATERIAL AND ENERGY RESOURCES**

	Units	Total	Upstream	Core	Downstream
Non-renewable resources, materials	kg	12,7	8,6	0,2	3,9
Gravel	kg	8,4	4,4	0,2	3,8
Calcite	kg	1,6	1,5	0,0	0,1
Limestone, unspecified	kg	0,9	0,9	0,0	0,0
Iron	kg	0,7	0,7	0,0	0,0
Other*	kg	1,1	1,1	0,0	0,0
Non-renewable resources, energy	kg	22,6	21,4	0,1	1,1
Oil, crude	kg	9,1	8,2	0,1	0,8
Coal, hard	kg	5,9	5,8	0,0	0,1
Gas, natural / m3	kg	5,7	5,6	0,0	0,1
Use of resources Coal, brown	kg	2,0	1,9	0,0	0,1
Other*	kg	0,0	0,0	0,0	0,0
Renewable resources, materials	t	1,7	1,7	0,0	0,0
Water, RS	t	0,9	0,9	0,0	0,0
Water, GR	t	0,5	0,5	0,0	0,0
Water, IR	t	0,2	0,2	0,0	0,0
Other*	t	0,1	0,1	0,0	0,0
Renewable resources, energy	MJ	132	131	0,5	1,0
Energy, gross calorific value, in biomass	MJ	99,4	99	0,1	0,2
Energy, potential, hydropower	MJ	27,5	26,6	0,3	0,6
Other*	MJ	5,5	5,3	0,1	0,1

* resources with a contribution lower than 5 %.

TABLE 6: GINGER WHITE SQUARE TOP, PAINTED ALUMINIUM BASE h. 105 cm, ENVIRONMENTAL INDICATORS		Units	Total	Upstream	Core	Downstream
Environmental Impact Categories	Global Warming	kg CO ₂ eq	53.6	43.6	0.4	9.6
	Ozone layer depletion	g CFC-11 eq	0.003	0.002	0.000	0.001
	Acidification	kg SO ₂ eq	0.227	0.205	0.002	0.021
	Photochemical oxydation	g C ₂ H ₄ eq	0.014	0.012	0.000	0.001
	Eutrophication	kg PO ₄ ³⁻	0.081	0.062	0.000	0.018
	Human toxicity	CTUh 10 ⁻⁵	24.3	21.9	0.1	2.3
	Ecotoxicity	CTUe 10 ³	3.89	3.57	0.00	0.32
	Land use	species.yr 10 ⁻⁸	17.5	16.9	0.06	0.55
Use of resources	Non-renewable resurces, materials	kg	13.8	9.5	0.2	4.0
	Non-renewable resurces, energy	kg	23.8	22.6	0.1	1.1
	Renewable resurces, materials	kg	1813	1767	4	42
	Renewable resurces, energy	MJ	136	135	1	1
	Secondary resurces, materials	kg	-	-	-	-
	Secondary resurces, energy	kg	-	-	-	-
	Recovered energy	MJ	-	-	-	-
	Total amount of water *	m ³	184	177	2	5
Direct amount of water used by the core process		l	1.24	0.0	1.24	0.0
Wastes	Hazardous wastes	kg	0.78	0.16	0.00	0.62
	Non-hazardous wastes	kg	7.8	3.1	0.0	4.7
	Materials subject to recycling	kg	10.9	1.0	0.0	9.9

* The total amount of water includes all direct and indirect consumptions of blue water in the system studied. Cooling water is omitted in this calculation.

**TABLE 7: GINGER WHITE SQUARE TOP, PAINTED ALUMINIUM
BASE h. 105 cm, MATERIAL AND ENERGY RESOURCES**

	Units	Total	Upstream	Core	Downstream
Non-renewable resources, materials	kg	13.8	9.5	0.2	4.1
Gravel	kg	8.9	4.8	0.2	3.9
Calcite	kg	1.7	1.6	0.0	0.1
Limestone, unspecified	kg	0.9	0.9	0.0	0.1
Iron	kg	0.9	0.9	0.0	0.0
Other*	kg	1.3	1.3	0.0	0.0
Non-renewable resources, energy	kg	23.8	22.6	0.1	1.1
Oil, crude	kg	9.2	8.3	0.1	0.8
Coal, hard	kg	6.6	6.5	0.0	0.1
Gas, natural / m3	kg	5.8	5.7	0.0	0.1
Use of resources Coal, brown	kg	2.1	2.1	0.0	0.0
Other*	kg	0.0	0.0	0.0	0.0
Renewable resources, materials	t	1.8	1.8	0.0	0.0
Water, RS	t	0.9	0.9	0.0	0.0
Water, GR	t	0.5	0.5	0.0	0.0
Water, IR	t	0.2	0.2	0.0	0.0
Other*	t	0.1	0.1	0.0	0.0
Renewable resources, energy	MJ	136	135	0.5	1.0
Energy, gross calorific value, in biomass	MJ	100	99.9	0.1	0.2
Energy, potential, hydropower	MJ	30.4	29.5	0.3	0.6
Other*	MJ	5.8	5.6	0.1	0.1

* resources with a contribution lower than 5 %.

ADDITIONAL ENVIRONMENTAL INFORMATION



Ginger is GECA certified: license number: ARP-2017, licensee since: 02 July 2009, license expiry date: 07 February 2020.



CONTACT AND OTHER INFORMATION

ARPER CONTACT INFORMATION

The LCA and EPD have been produced by Arper in collaboration with 2B Srl (www.to-be.it). The company references are:

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CERTIFICATION AND CERTIFICATION BODY INFORMATION

Registration N°: S-P-01496

Publishing date: 2019-01-18

Document valid until: 2021-12-13

Reference year: 2017

Geographic area validity: Global

PCR 2009:02, version 2.0 (UN CPC 3811, Seats), PCR review conducted by Leo Breedveld, available on the website of the International EPD Consortium (IEC): www.environdec.com

Quality audit for the declaration and the information in compliance with ISO 14025:2006

■ EPD process certification □ EPD verification

Third party verifier: CSQA Certificazioni Srl, Via San Gaetano n. 74, 36016 Thiene (VI)

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Accredited by: Accredia (004H)

OTHER INFORMATION

This Environmental Product Declaration is developed under the EPD® International System. This document is available on the website of the Swedish Environmental Management Council (www.environdec.com).

EPDs belonging to the same product category may not be comparable. Comparisons between EPDs shall be done carefully, special attention shall be given to system boundaries and data sources.

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