

# Environmental Product Declaration



In accordance with ISO 14025 and UNE-EN 15804:2012+A2:2019 for:

## PLAY Family Luminaires 3 W

from

# LedsC4

Afores s/n 25750 Torà  
Lleida - Spain

Programme:

The International EPD® System, [www.environdec.com](http://www.environdec.com)

Programme operator:

EPD International AB

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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](http://www.environdec.com)*



## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a>

<b>Accountabilities for PCR, LCA and independent, third-party verification</b>
<b>Product Category Rules (PCR)</b>
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR):
PCR review was conducted by: <i>The Technical Committee of the International EPD® System. A complete list of members is available at <a href="http://www.environdec.com">www.environdec.com</a>. The review panel can be contacted through <a href="mailto:info@environdec.com">info@environdec.com</a>.</i>
<b>Life Cycle Assessment (LCA)</b>
LCA accountability: <i>LedsC4</i>
<b>Third-party verification</b>
Independent third-party verification of the declaration and data, according to ISO 14025:2006 via:
<input checked="" type="checkbox"/> EPD verification by EPD Process Certification*
Internal auditor: <i>MARCEL GOMEZ CONSULTORÍA AMBIENTAL <a href="mailto:info@marcelgomez.com">info@marcelgomez.com</a></i>
Third-party verification: <i>MARCEL GOMEZ CONSULTORÍA AMBIENTAL</i> is an approved certification body accountable for third-party verification
Third-party verifier is accredited by: The International EPD® System
<small>*For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v4, Section 7.5.</small>
Procedure for follow-up of data during EPD validity involves third party verifier:
<input checked="" type="checkbox"/> Yes <input 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 programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

Owner of the EPD: LedsC4

Contact: Phone: +34 973 468 100; @: [qualitat@ledsc4.com](mailto:qualitat@ledsc4.com)

Description of the organisation: LedsC4 was founded in 1963. It began its activity in Torà, in the province of Lleida, manufacturing handcrafted forged lighting fixtures. With the arrival of the 21st century, they focused their lighting towards contemporary design and the incorporation of new technologies. The introduction of LED in 2008 into the world of lighting meant a great revolution and a great opportunity in the design and development of products and projects. In 2014, a period of great growth was culminated with the opening of new subsidiaries in South Africa, Poland and the United Arab Emirates

Product-related or management system-related certifications: ISO 14001.ES124321-1  
ISO 9001 ES124322-1

Name and location of production site(s): The PLAY Family is produced in Torà, Spain

Clients: This mainly concerns B2B relationships although there are also some B2C relationships.

Further information:

Company website:

<https://ledsc4.com>

## Product information

Product name: PLAY Family 3W

Product identification: The study is carried out on two references of 3.2W power (the one that has the most negative impact on the environment and the one that has the least), and an average is taken that includes 288 references of the same family and power. All the products included can be consulted according to the following nomenclature:

AGxx-P3c8ddeef

- fxx=33,34,36,38,39,41,61,62,63,64,65,66
- c=V,W,X
- dd=F1,M2
- ee=BB,O
- ff=14,60,AF,EP

All references with this nomenclature (288 references) are included in this study.

Product description: The luminaires of the PLAY P3 family are used in lighting systems. Play P3 is the most modular downlight collection on the market. It has a 3.2W LED module, to which a wide variety of frames and accessories can be added, thus obtaining the specific downlight needed for each situation. It also has 4 optics with different apertures (for this study, one type has been considered, as the composition of the four is similar). A lifespan of 20,000 hours per luminaire is considered. The references available on the market are differentiated by a combination of codes. These codes indicate a series of characteristics such as type of material, colour, type of driver, type of optics, etc. The references studied in this EPD (divided by power, size and material) are:

AG65-P3V8F1OU14 P3 module, heaviest frame made of aluminium and plastic.

AG33-P3V8F1OU14 P3 module, lightest frame made of aluminium without plastic.

Product specifications: The specific characteristics of the product are attached in the following table and can be seen in more detail in the technical data sheet [here](#).

It can be installed and uninstalled manually without electricity consumption.

The product characteristics are shown in the following table:

Characteristic	Unit	Technical specifications
Power	W	3,2
Color temperature	K	2700
Estimated useful life	h	50,000 L80B20
Multivoltage equipment		Yes
Structure	Color	White
Diffuser		Transparent
Light source		LED
Real lumens		282
Optic angle		Flood 46°
Equipment		ON/OFF
Structure		Aluminum
Diffuser		PMMA
Net weight	kg	0.15
Packaged weight	kg	0.06

At the composition level, the construction of the luminaires is similar, mainly consisting of an aluminum body containing a diffuser, an LED module, an LED, a driver (regulation), electrical cables, and fixing elements. The power is 3.2 W in both references. Sensitivity analyses of the differential components of each reference have shown that the difference in the potential environmental impact of different types of installation, diffuser color, and regulation type (driver) does not affect the total potential impact of the luminaire by more than 10%, therefore the results can be grouped according to UNE-EN 15804:2012+A2:2019. The technical characteristics of the luminaires are presented with a representative of recessed installation.

Product Composition: The basic raw materials for the references included in this study of the PLAY FAMILY are:

- Aluminum (Frame and Module)
- Plastic (Frame, Driver, and Optics)
- Cable
- LED
- White paint (Frame)

Geographical scope: Global

## LCA information

Declared unit: The declared unit is that quantification of a function offered by the object of study according to which all the inputs (resources and necessary energy) and outputs (emissions and waste) of the studied system will be referred to. In this case, the manufacturing, distribution, installation, use and end-of-life of one thousand lumens (1,000 lm) of the general Play Family 3W luminaire unit has been selected as the declared Unit, also including the components for its fixing.

Reference service life: 20,000 hours

Time representativeness: Whenever possible, the most current data was used. For generic data, the limit has been set at 10 years and for specific data, a maximum of 5 years is allowed. It should be noted that the useful life of the LED reaches up to 50,000 hours. In a normal operation of 8 hours a day during the 250 working days per year, the product can reach up to 25 years of use.

Database(s) and LCA software used: Generic data is obtained from the GaBi software database. This database is based on the International System for Life Cycle Reference Data (ILCD), as required by UNE-EN 15804: 2012 + A2: 2019. GaBi Professional v. 10.6.1.35. GaBi Database: 2021.2.

Description of system boundaries:

Cradle to grave and module D (A + B + C + D); according to EN 15804 and PCR. This includes the following life cycle stages:

Modules A1-A3: Product stage

A1: Raw material supply

A2: Transport

A3: Manufacturing

Modules A4-A5: Construction process stage

A4: Transport

A5: Building installation

Module B Use stage:

B1: Use

B2: Maintenance

B3: Repair

B4: Replacement

B5: Refurbishment

B6: Operational use of energy

B7: Operational use of water

Module C End-of-life stage

C1: Deconstruction, demolition

C2: Transport

C3: Waste treatment

C4: Disposal

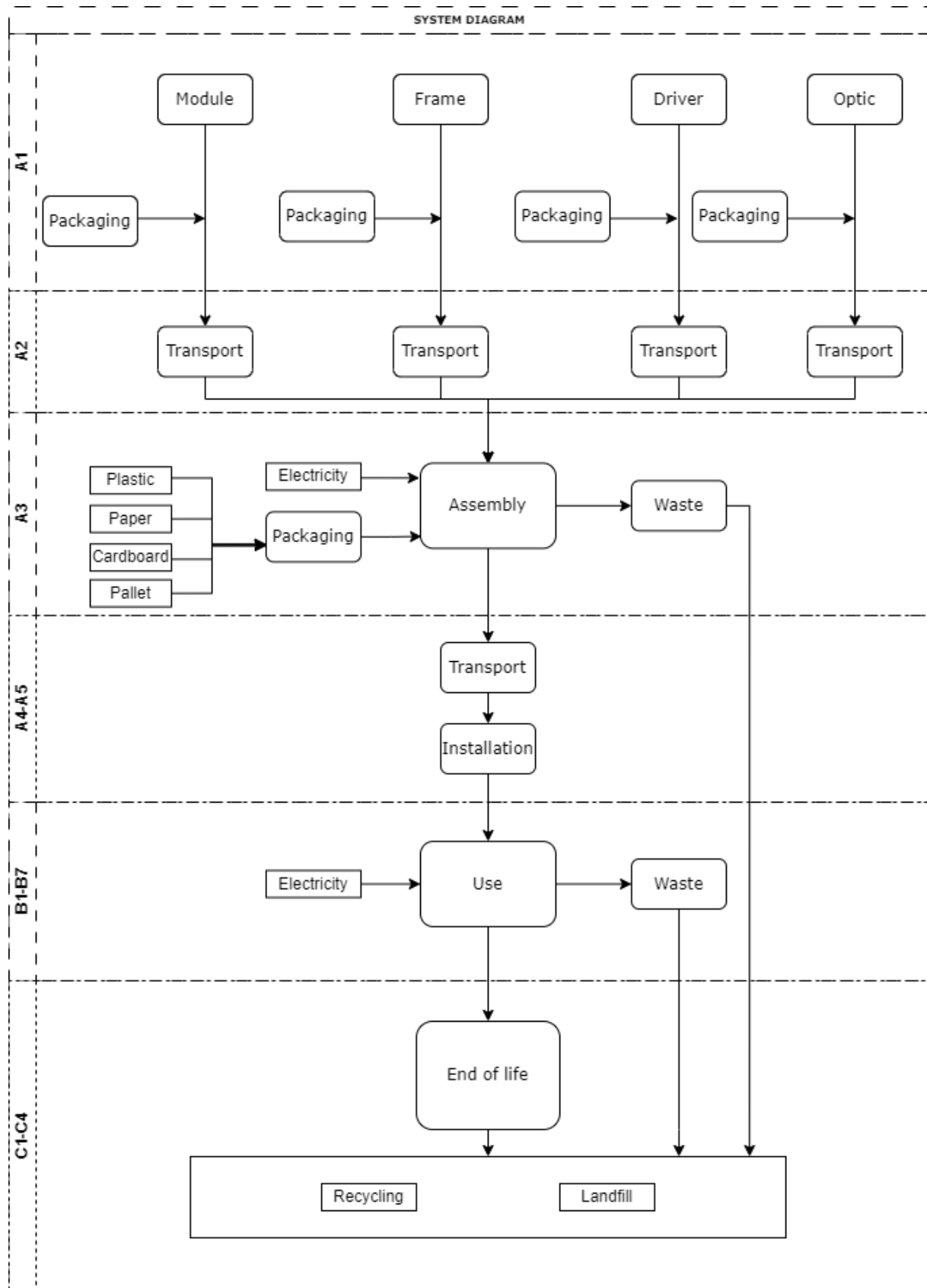
Module D Benefits and burdens beyond the system boundary.

Re-use, recovery, potential for recycling

Excluded life cycle stages: The following processes are excluded from the analysis, according to the selected PCR:

- Inventory flows of infrastructure, construction, production equipment and tools that are not used directly in the production process.
- Inventory flows from personnel-related processes, such as transportation to and from work.
- Waste generated during the manufacturing process. Waste represents less than 5% of total production.
- Research and development activities.
- Long-term emissions.

System diagram:



More information: EPD generated by Ana Rodríguez and Raúl Antúnez from Grup Carles (Grup Carles Gestió i Projectes S.L.)

#### PRODUCT STAGE A1-A3:

The manufacturing process comprises the stages of raw material supply (A1), raw material transportation (A2), and manufacturing (A3). Torà (Lérida) is the location of two essential facilities of LedsC4: the Design and Production centers, where the company's lighting solutions are born. LedsC4 also has a broad network of highly skilled international suppliers to develop a large part of its collections responsibly and achieve the highest standards of quality, efficiency, and flexibility.

A1 Raw material supply: This module takes into account the extraction and processing of raw materials, as well as the energy produced before the manufacturing process under study.

In the case of the references included in the current study, the suppliers provide the raw materials, that is, the prefabricated components that make up the product.

A2 Transport: The transportation of the raw materials from the supplier to the LedsC4 headquarters in the province of Lérida is calculated taking into account the distance traveled, the mode of transportation (ship and truck), and the fuel used for each raw material.

A3 Manufacturing: This module includes the energy and water consumption used during the manufacturing process. Once the raw materials are received at LedsC4 headquarters in the province of Lérida, the assembly of each final product (luminaire) with its corresponding combinations is carried out according to the customer's specifications. At LedsC4, the energy and packaging material consumption used during the manufacturing process of the PLAY family products are considered. At the same time, the emissions in the factory not originated from the combustion of fossil fuels are analyzed, as well as the transportation and management of the waste generated in the plant (as well as the production losses, which are managed externally to the production center and in this case represent less than 3% of the total impact). For the PLAY family, the assembly of prefabricated components is carried out, and there are no significant impacts associated with production losses or industrial waste, as they represent less than 3% of the total production. The waste generated is mainly due to the industrial packaging in which the raw materials are delivered. It has been considered that the electricity consumed in the production plant corresponds to the electricity mix of Spain for the assembly of the products. The primary data used have been obtained from the production plant itself and are representative of the production of the PLAY product for the year 2021.

#### PRODUCT STAGE A4-A5:

Once the pieces are assembled, they are sent to customers who distribute them worldwide for subsequent installation. A weighted average has been calculated based on sales during the year 2021.

A4 Customer transportation: This stage includes the transportation of finished and packaged products from the door of the LedsC4 factory to the construction site for subsequent installation. For domestic distribution, transportation by truck has been considered. For global distribution, there are three means of transportation: truck, plane, and ship. A weighted average of the mileage associated with the Play family product has been considered based on its sales during the year 2021. The distance from the production center to the departure airport or port, the air and sea transportation itself, and transportation by truck from the arrival airport to a final distribution point have been considered.

Parameter	Value/Description
Fuel type and consumption of vehicle or type of vehicle used for transportation, e.g. long-haul truck, ship, etc.	28-ton truck with a maximum load capacity of 12.4 tons. This truck complies with Euro 6.0 regulations. 0.00343 KG DIESEL
Ship with a capacity of 5,000-200,000 tons.	0.00023 KG heavy fuel (2.5wt.% S)
Plane with a maximum load capacity of 65 tons.	0.422 KG KEROSENE
Distance	Truck: 1,354 km
	Ship: 7,410 km
	Plane: 4,308 km
Capacity utilization (including empty returns)	98% according to the database

**A5 Construction/Installation:** The installation module includes all materials and energy used for the preparation of the product for use. At the same time, the transportation and management of packaging waste and its transport to a local waste manager (included in the corresponding modules C and D) are taken into account. In the case of installation, consumption is considered zero because it is done manually, although electric tools such as drills can be used. In this stage, 0% waste is considered. Packaging waste is only considered for two treatment scenarios: recycling, with the most updated packaging waste recycling rate according to Eurostats (2019), and the rest is sent to a controlled landfill within a radius of 100 km, a higher value than usual based on empirical criteria.

Parameter	Value/Description
Auxiliary installation materials (specified by material)	Not used
Water use	Not used
Other resource use	No other resource consumption
Quantitative description of energy type (regional mix) and consumption during installation process	No energy consumption
Waste materials on site prior to waste processing, generated by product installation (specified by type)	-
Output materials (specified by type) resulting from waste processing on site, e.g. collected for recycling, for energy recovery, disposal	Cardboard and paper: 0.050 kg Plastic: 0.01 kg

## PRODUCT STAGE B1-B7:

This stage is composed of:

**B1-Use:** It includes the environmental aspects and impacts during the normal use of the product, excluding water and energy consumption. The impact of the product at this stage is negligible.

**B2-Maintenance:** No type of maintenance is required during the product's lifecycle.

**B3-Repair:** No type of repair is required during the product's lifecycle.

**B4-Replacement:** No replacement is required during the product's lifecycle.



**B5-Rehabilitation:** No rehabilitation is required during the product's lifecycle.

**B6-Energy use in service:** In the use phase, electricity consumption has been calculated for 20,000 hours of use for a power of 3.2 W, as it is the guaranteed hours. However, the LED is guaranteed to have a life of 50,000 hours. During the guaranteed 20,000 hours of useful life, the total electricity consumption has been estimated for a power of 3.2 W. Therefore, the operational energy use stage B6 has a value of 64 kWh.

90% of the customers are in Europe, and only 10% are in the rest of the world. Therefore, to calculate the energy consumption in this phase, the European energy mix is taken into account.

Parameter	Value/Description
Auxiliary materials (by material)	No auxiliary material is used
Water use	Not used
Other resource use	No other resource consumption
Type of energy used	European electricity mix 160 kWh
Output power	0.0032 kW

**B7-Water use in service:** No water consumption is required during the product's lifecycle.

#### PRODUCT STAGE C1-C4:

The product is required to be collected and professionally recycled in accordance with the EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE). The company fulfills its responsibility within the EU through participation in national WEEE schemes.

**C1-Dismantling:** In this stage, no machinery or energy consumption is required for dismantling. No auxiliary materials are required.

**C2-Transport to waste handler:** In this stage, transportation to the local handler within a radius of 100 km has been considered.

**C3-Waste treatment:** At this stage, the recycling and reuse rate of the most up-to-date category of lighting equipment waste from Eurostats (2019) is used, which is 48.5%. In the final stage of possible reuse, recovery and recycling, all materials treated and subsequently recycled are taken into account both in the installation phase and in the end-of-life phase.

The factors used for aluminum, plastic and cardboard are respectively: 1; 0.9; 0.85.

**C4-Final disposal:** The rest of the product that has not entered the treatment system is sent to a landfill.

#### STAGE OF THE POTENTIAL FOR REUSE, RECOVERY, AND RECYCLING PROCESS D.

The current product claims environmental benefits due to recycling and reuse according to the Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Geography	Global																	
Specific data used	More than 99% of the specific data is used in the EPD.					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	>10%					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	1					-	-	-	-	-	-	-	-	-	-	-	-	-

The principle of modularity has been followed, as well as the "polluter pays" principle.

Allocation procedure: in cases where it was necessary (energy, waste generation), mass allocation has been used.

All primary data has been obtained from LedsC4 Secondary data has been obtained from the Sphera database.

The electrical mix used in the manufacturing plant is from Spain (ES: Electricity grid mix from Sphera). The electricity production according to this electrical mix is:

- Lignite: 0.93%
- Hard coal: 15.44%
- From coal gases: 0.44%
- Natural gas: 23.23%
- Of fuel oil: 5.72%
- Biomass: 1.58%
- Biogas: 0.34%
- Waste: 0.56%
- Nuclear: 21.06%
- From hydro: 7.64%
- Wind power: 17.82%
- Photovoltaic: 3.09%

- Solar thermal: 2.13%
- Others:0.02%

The included scenarios are currently in use and are representative of one of the most likely alternatives.

The following processes have not been included as their impact is not significant:

- Manufacture of equipment used in production, buildings or any other capital goods;
- Transportation of personnel to the plant;
- Transportation of personnel within the plant;
- Research and development activities.
- Long-term emissions.

## Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Aluminum	41%	0%	0%
Plastic	19%	0%	0%
Cable	17%	0%	0%
Led	3%	0%	0%
Electronic components	5%	0%	0%
Other materials	15%	0%	0%
TOTAL	100%	0%	0%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Cardboard (boxes and separators)	0.047	26%	
Paper	0.011	8%	
Plastic	0.016	7%	
TOTAL	0.074	40%	

During the product life cycle, no hazardous substances have been used in a percentage greater than 0.1% of the product weight, including substances listed in the "List of Substances of Very High Concern (SVHC), which are candidates for authorization under the REACH legislation.

Distribution packaging: This distribution packaging is not the same as the consumer packaging. It mainly consists of a cardboard box with trays and separators, also made of cardboard, paper instructions, and a plastic bag.

## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804

Results per declared unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	3,95E+00	3.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.36E+01	0.00E+00	0.00E+00	8.26E-02	3.39E-01	5.43E-01	-6.18E-01
GWP-biogenic	kg CO <sub>2</sub> eq.	4.52E+00	3.31E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.26E+01	0.00E+00	0.00E+00	8.20E-02	3.39E-01	5.48E-01	-7.82E-01
GWP-luluc	kg CO <sub>2</sub> eq.	-5.87E-01	4.44E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.02E-01	0.00E+00	0.00E+00	-1.05E-04	5.74E-04	-5.66E-03	1.62E-01
GWP-total	kg CO <sub>2</sub> eq.	2.16E-03	1.07E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.17E-01	0.00E+00	0.00E+00	6.76E-04	5.98E-05	5.11E-04	-1.40E-04
ODP	kg CFC 11 eq.	1.76E-09	2.78E-16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.98E-12	0.00E+00	0.00E+00	1.05E-17	3.93E-13	1.31E-15	-1.08E-12
AP	mol H <sup>+</sup> eq.	2.42E-02	1.38E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.72E-01	0.00E+00	0.00E+00	8.52E-05	4.63E-04	1.70E-03	-3.99E-03
EP-freshwater	kg P eq.	1.26E-05	8.85E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-04	0.00E+00	0.00E+00	2.45E-07	4.21E-07	4.29E-05	-1.64E-06
EP-marine	kg N eq.	5.19E-03	6.05E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-02	0.00E+00	0.00E+00	2.78E-05	1.65E-04	4.07E-04	-6.73E-04
EP-terrestrial	mol N eq.	5.59E-02	6.62E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.29E-01	0.00E+00	0.00E+00	3.32E-04	2.01E-03	4.47E-03	-7.19E-03
POCP	kg NMVOC eq.	1.46E-02	1.72E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.11E-01	0.00E+00	0.00E+00	7.45E-05	4.47E-04	1.29E-03	-2.21E-03
ADP-minerals&metals*	kg Sb eq.	7.38E-06	1.16E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-05	0.00E+00	0.00E+00	6.28E-09	1.66E-08	3.77E-08	-5.53E-08
ADP-fossil*	MJ	7.98E+01	4.49E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+03	0.00E+00	0.00E+00	1.10E+00	1.28E+00	7.98E+00	1.20E+01
WDP	m <sup>3</sup>	1.23E+00	5.32E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E+01	0.00E+00	0.00E+00	7.15E-04	1.76E-01	-6.60E-03	-1.32E-01
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.

## Potential environmental impact – additional mandatory and voluntary indicators

Results per declared unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	4.53E+00	4.34E+01	0.00E+00	0.00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,29E+01	0,00E+00	0,00E+00	8,27E-02	3,39E-01	5,49E-01	7,80E-01

<sup>1</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Use of resources

### Results per declared unit

Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1.93E+01	2.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.80E+02	0.00E+00	0.00E+00	6.11E-02	2.96E-01	5.77E-01	- 2.98E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.93E+01	2.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.80E+02	0.00E+00	0.00E+00	6.11E-02	2.96E-01	5.77E-01	- 2.98E+00
PENRE	MJ	7.98E+01	4.49E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+03	0.00E+00	0.00E+00	1.10E+00	1.28E+00	7.98E+00	- 1.20E+01
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	7.98E+01	4.49E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+03	0.00E+00	0.00E+00	1.10E+00	1.28E+00	7.98E+00	- 1.20E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	1.77E-23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	2.07E-22	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	4.63E-02	2.99E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.60E-01	0.00E+00	0.00E+00	7.02E-05	4.21E-03	7.87E-05	-3.31E- 03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

## Waste production and output flows

### Waste production

Results per declared unit																
Indicator	Unit	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.53E-07	3.37E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.90E-07	0.00E+00	0.00E+00	5.53E-11	1.74E-09	1.42E-09	-2.46E-08
Non-hazardous waste disposed	kg	3.88E-01	4.55E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E+00	0.00E+00	0.00E+00	1.63E-04	9.38E-02	9.71E+00	-1.02E-01
Radioactive waste disposed	kg	1.66E-03	3.87E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-01	0.00E+00	0.00E+00	1.33E-06	7.43E-05	9.17E-05	-1.46E-05



## Output flows

### Results per declared unit

Indicator	Unit	A1	A2	A3	Tot.A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy. electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy. thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

## Information on biogenic carbon content

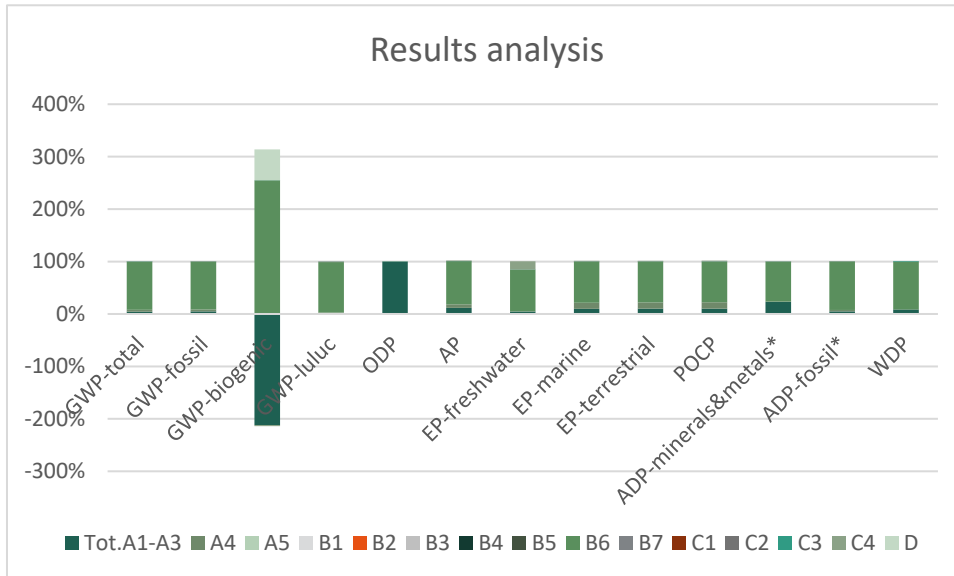
### Results per declared unit

BIogenic CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in packaging	kg C	1.11E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

## Results analysis

Most of the impacts, as can be seen, occur during the use stage of the product, more specifically during phase B6, which is associated with the use of electrical energy during the life of the product. 92% of the impact is associated with energy consumption. In this phase, 92% of greenhouse gas emissions (total GWP), 92% of the use of non-renewable resources (fossil ADP) and 91% of the impacts associated with water consumption are produced.



## Information related to Sector EPD

*This EPD<sup>®</sup> is individual.*

## Differences with previous versions

First version of EPD

## References

- General Programme Instructions of the International EPD® System. Version 3.01.
- PCR 2019:14. Construction products.v 1.11.
- ISO 14020: 2000 Environmental labels and declarations — General principles
- ISO 14025: 2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures
- ISO 14040: 2006 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044: 2006 Environmental management - Life cycle assessment - Requirements and guidelines
- PCR 2019:14 Construction products (EN 15804:A2) version 1.11
- EN 15804: 2012 + A2: 2019 Sustainability of construction works – Environmental product declarations - Core rules for the product category of construction products
- Memoria del Análisis del Ciclo de Vida Family Play 3W.
- CNMC. 2020. National Commission of Markets and Competition. 2020. Agreement on statistical information of the system of guarantees of origin related to the energy produced in the year 2020. File no.: GDO/DE/001/21
- [https://gdo.cnmc.es/CNE/resumenGdo.do?informe=garantias\\_etiquetado\\_electricidad](https://gdo.cnmc.es/CNE/resumenGdo.do?informe=garantias_etiquetado_electricidad)
- ISO 21930:2017. Sustainability in buildings and civil engineering works - Basic standards for environmental declarations of construction products and services.
- Weidema. B.P. and Wesnaes. M.. 1996. Data quality management for life cycle inventories: an example using data quality indicators. Journal of Cleaner Production 4 (3-4): pp. 167 to 174.OEFSR Guide of the European Commission. Version 6.3 May 2018

