

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

Recycled polystyrene profiles - Baseboards, crown moulding and trims

from

Indústria e Comércio de Molduras Santa Luzia Ltda.




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



General information

Programme information

Programme:	 The International EPD [®] System
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): *PCR 2019:14 Construction products version 1.1 (2020-09-14)*

PCR review was conducted by: *IVL Swedish Environmental Research Institute*
 Moderator: *Martin Erlandsson, martin.erlandsson@ivl.se*

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

EPD process certification EPD verification

Third party verifier: *Alejandro Pablo Arena*
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Procedure for follow-up of data during EPD validity involves third party verifier:

Yes 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.

Notes about this version: The International EPD[®] System logo on the cover was added along with the Brazilian Hub (EPD[®] Brasil) logo.

Company information

Owner of the EPD: Indústria e Comércio de Molduras Santa Luzia Ltda.

Address: Rua Heriberto Effting, 555 - Bairro Santa Luzia

Location of production site(s): Braço do Norte, State of Santa Catarina, Brazil

Website: www.santaluziamolduras.com.br
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About the organization

Santa Luzia is one of the Americas' market leaders for sustainable eco-friendly baseboards, mouldings and millwork. Since 2002 Santa Luzia has been using fully recycled polystyrene to make high quality, elegant design. Santa Luzia's commitment to design and quality is reflected in its wide array of products.

Concerned about rising deforestation and global warming, Santa Luzia gradually started exploring alternative raw materials for producing mouldings. In the last 15 years, we have accepted the challenge of finding economically viable and responsible solutions with the environment. We invested in research and development to build recycling facilities in Braço do Norte, Brazil and other Brazilian states with the capacity to recover more than 1000 tons of post-consumer plastic waste and post-industrial plastic scrap per month. Reinforcing our commitment to organizational quality, in 2021 we obtained the ISO 9001 (Quality Management System) Certification.



Our positive impacts on the environment:

- We have already recycled the equivalent of 83 thousand plastic waste and scrap carts of residues such as expandable polystyrene (EPS). A development model that has a real positive impact on nature.
- By developing our products with 100% recycled raw material content, we stopped overthrowing more than 893 thousand trees.
- Santa Luzia already accumulates the corresponding to 1624 soccer fields of plastic waste and scrap transformed into raw material for design and decoration products.
- In our factory, the raw material discarded during production is reincorporated into the process, creating an infinite cycle of reuse that does not cause damage to the environment.

Product information

Product name: Baseboards, crown mouldings and trims made of recycled polystyrene profiles

Product description: The polystyrene profile finished into the format of baseboard or crown moulding or trim, can be on white, black, gold, silver, copper, gray, wood-like, blue ocean, green eucaliptus and pistachio, red, ivory and orange-brick colors, and its raw material is called polystyrene, also known as EPS. These polystyrene profiles are part of the Classic Line made up of: trims, baseboards, crown mouldings and “treads and rosettes” accessories. The profiles come from recycled ISOPOR®, which after being recycled, 96% of this raw material is used in our profiles, which in turn, after reaching the end of its useful life, the profile can be recycled and made into raw material again and used to manufacture new products. These profiles has some interesting features that differentiate it from other products in its category, such as: it does not mold, it does not rot, it is immune to pests and termites, it is water resistant and can be used in humid environments such as kitchens, bathrooms and laundry rooms. Its use is only indoors and the bars measure 2.40 linear meters in length. The baseboard, trim and crown moulding of recycled polystyrene (Rec.PS profile) is used to cover the joint between the wall surface and the floor or ceiling and can perform different functions such as protects the wall from kicks and damage from other objects (e.g., shoes, furniture, and vacuum attachments), abrasion, and for aesthetic reasons as a decorative moulding.

Average dimensions: 2400 mm length x 100 mm height x 16 mm thickness

Linear weight: 0.590 kg/m

Density: 0.509 g/cm³

UN CPC code: 369 – Other plastics products
Subclass 36910 - Floor coverings of plastics, in rolls or in the form of tiles; wall or ceiling coverings of plastics

Products covered: 456 RP/BR; 459 RP/BR; 456 RP/Grey colors; 548 RP/BR; SL101 RP/P; SL102 RP/P; 443 RP/BR; 454 RP/Grey colors; 3454 RP/several colors.

Geographical scope: Brazil



Baseboard



Trim



Crown moulding

The product considered on this EPD is an average product representative of the recycled polystyrene profiles that covers an average range of baseboards, trims and crown mouldings from Indústria e Comércio de Molduras Santa Luzia Ltda. The variability range is +/-10% of the GWP-GHG results.

LCA information

Functional unit / declared unit:

1 linear meter (m) of ready to install decorative wall product

Time representativeness:

July 2020 to March 2021

Database(s) and LCA software used:

SimaPro[®] software v.9.2 developed by PRé Consultants was used to create the product system model. The ecoinvent[®] database version 3.6 provided the life cycle background data for product system modelling.

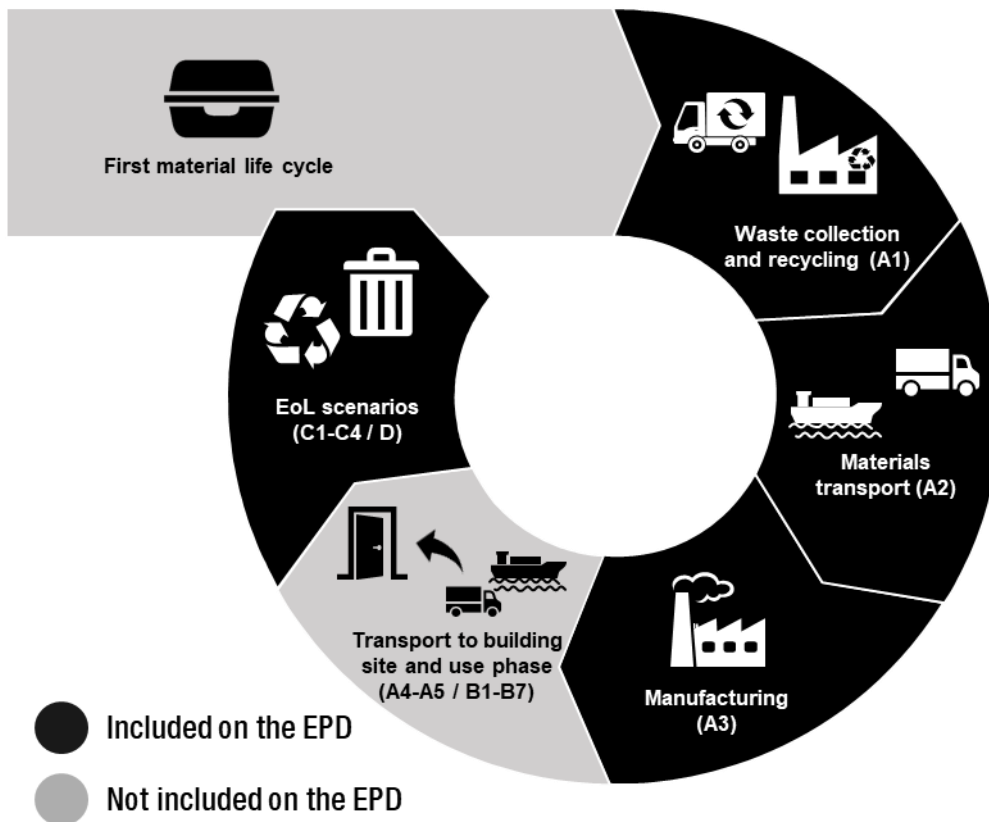
System boundaries:

Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D);

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	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	
Geography	BR	BR	BR	BR	BR	MND	MND	MND	MND	MND	MND	MND	BR	BR	BR	BR	BR	
Specific data used	>95%					-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	GWP-GHG: ±10%					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-	-

Description of the system boundaries:



A1 Waste collection and recycling

This stage of the life-cycle includes the sorted expandable polystyrene (EPS) collection and transport to the Santa Luzia's subsidiary plant (also known as Usina III) from several collection routes either by truck or with a small share by maritime freightship. The sorted EPS passes through another additional sorting to eliminate some impurities. The recycling process included the compression/degassing, from which the air (blowing agent) is removed from the EPS blocks to reduce the material volume, followed by polystyrene grinding to reduce the particle size and enable the subsequent processes.

A2 Transport to manufacturer

This process accounts for the road and maritime transport of the recycled polystyrene (PS) and the transport of the ancillary materials (virgin PS, additives, pigments, packaging and inks) to Santa Luzia.

A3 Manufacturing

The polystyrene profiles manufacturing encompass the processes of first material mixing where the recycled and grinded PS is mixed along with the grinded material acquired from suppliers, the pelletization process that transforms the milled material into pellets, the second material mixing and storage, materials preparation where the mixture of pellets is heated to remove residual moisture and where is incorporated the virgin PS, the additives, and the pigments, followed by the extrusion of the profiles where is also added virgin PS and additives in the extruder hopper. The extruded profile is sent to two possible routes for the profile's coating: water-based and solvent-based. Currently 73% of the profiles goes through the solvent-based route and 23% goes through the water-based. At the painting process the extruded profile pass through machining for tearing the piece of recycled product, polishing and then the piece painting. The last process in Santa Luzia's operation is the product's packaging.

C1-C4 + D: EoL scenarios

The product uninstallation (C1) is quite straightforward and does not require the use of any specific equipment since the product is glued with double-side tapes on the wall. Therefore, we assume that there is no energy or materials consumed on this life cycle phase. For the EoL it is assumed an average distance of 40 km by truck (C2), and that 14.4% of all polystyrene profiles put into market will be sent for recycling (D) and the remaining 85.6% is disposed on an average scenario for polystyrene disposal (C4) in Brazil (0.6% for incineration, 2.9% is open burned, 8.4% in open dumps, and 88.4% in sanitary landfill). At the recycling facility the product is washed, grinded and pelletized.

Table 1. End-of-life scenario definition per functional unit / declared unit (C1-C4).

Processes		Value	Unit
Collection process specified by type	Collected separately	0.085 (share for recycling)	kg
	Collected with mixed construction waste	0.505 (share for disposal)	kg
Recovery system specified by type	Reuse	-	kg
	Recycling	0.085	kg
	Incineration for energy recovery	-	kg
Disposal specified by type	Product or material for final deposition	0.505	kg
Assumption for scenario development	14.4% of the product is sent for recycling* 85.6% of the product is sent for average Brazilian scenario for polystyrene disposal *Assuming the 24% of plastic products are recycled in Brazil (ABIPLAST, 2020), and that only 60% of the Baseboard will be recycled (best professional judgment)		

Allocation:

Allocation can be defined as the impact factors distribution between the reference product and the coproducts when they are simultaneous and dependent. There are two types of situations where allocation may be required: in multi-output processes and in end-of-life processes (i.e., the recycling processes).

- **Multi-output process:** Regarding to the foreground model, the products that are classified as non-conforming and part of the processing losses are internally recycled by Santa Luzia[®] to produce new Baseboards. Therefore, there is no need to apply an allocation for these flows since this is closed-loop system.
- **EoL process:** Regarding to the use of secondary materials (i.e., the recycled polystyrene) we considered the cut-off approach as recommended by EN 15804+A2:2019 and the PCR 2019:14 version 1.1 following the end-of-waste state principle. At the Santa Luzia[®] production system, it can be observed two situations where the EoL allocation may be applied. At the inputs side (i.e., module A1) since the main raw material of the polystyrene profiles of Santa Luzia[®] is the recycled expanded polystyrene (EPS). And, at the output side (i.e., module D) since the polystyrene profile can be recycled. For the secondary material consumed by Santa Luzia[®], the end-of-waste state was set from the moment that the waste is collected and transported to the recycling processing plant. Therefore, all the impacts of the waste transportation by road and maritime, expanded polystyrene degassing and the polystyrene grinding were fully attributed to the Santa Luzia[®] product. For the potential recycling at the EoL of the polystyrene profile (module D), as recommended by the PCR 2019:14 and the EN 15804+A2:2019 the allocation was calculated according to the equation provided on Annex D of EN 15804+A2:2019.

Cut-off criteria:

The cut-off criteria shall be 1% of renewable and non-renewable primary energy usage and 1% of the total mass of that unit process. The total neglected input flows per module shall be a maximum of 5% of energy usage and mass. For this study, all input and output flows have been considered at 100%, including raw materials as per the product composition provided by the manufacturer and packaging of raw materials as well as the final product. The only cut-off criterion

was the environmental relevance of the production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities, although some irrelevant inputs may eventually not be considered, e.g., the cardboard used to clean the extrusion machine.

Electricity source:

As required by the PCR 2019:14 the emission factor for the electricity production used for product system modelling must be declared if the electricity of the A3 processes accounts for more than 30% of the total energy in stage A1 to A3. In our LCA model we considered the grid mix from Brazil from the “market for” dataset of ecoinvent[®] database and the emission factor was 0.211 kg CO₂ eq./kWh.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Polystyrene	0.52 – 0.59	91%	-
Additives	6.7E-03 – 1.4E-02	-	-
Pigments	3.3E-03 – 7.1E-03	-	-
TOTAL	0.590	-	-
Packaging materials	Weight, kg	Weight-% (versus the product)	
Low-density polyethylene packaging film (shrink)	1.44E-02	2%	
Polypropylene (tape)	4.97E-04	>0.1%	
Corrugated board box	1.89E-02	3%	
Low-density polyethylene (blanket)	1.16E-04	>0.1%	
Non-woven textile polypropylene	2.51E-04	>0.1%	
Cardboard corner	4.60E-05	>0.1%	
Low-density polyethylene packaging film (stretch film)	1.5E-04	>0.1%	
TOTAL	3.44E-02	5%	

Environmental Information

Potential environmental impact – mandatory indicators according to EN 15804

Results per 1 linear meter (m) of ready to install decorative wall product																		
		Product stage			Construction stage		Use stage							End of life stage				Resource recovery stage
		Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
Indicator	unit	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq	1.53E-01	2.60E-02	4.96E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.57E-03	0.00E+00	1.33E-01	-2.71E-01
GWP-biogenic	kg CO ₂ eq	6.95E-02	9.29E-06	6.12E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.11E-07	0.00E+00	5.90E-05	8.32E-03
GWP-luluc	kg CO ₂ eq	2.22E-03	3.22E-07	9.58E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.18E-08	0.00E+00	3.61E-06	7.32E-04
GWP-total	kg CO ₂ eq	2.24E-01	2.60E-02	5.66E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.57E-03	0.00E+00	1.33E-01	-2.61E-01
ODP	kg CFC11 eq	3.10E-08	5.88E-09	2.25E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.80E-10	0.00E+00	4.35E-10	-1.03E-11
AP	mol H+ eq	9.99E-04	1.73E-04	2.46E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.38E-05	0.00E+00	6.21E-05	-9.37E-04
EP-freshwater	PO ₄ ³⁻ eq	1.48E-04	2.50E-05	2.02E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.99E-06	0.00E+00	1.94E-05	-4.64E-05
EP-freshwater	kg P eq	1.23E-06	6.08E-08	6.34E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.05E-09	0.00E+00	8.38E-09	1.87E-08
EP-marine	kg N eq	3.74E-04	6.86E-05	4.18E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.32E-06	0.00E+00	4.50E-05	-1.49E-04
EP-terrestrial	mol N eq	3.91E-03	7.55E-04	4.33E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.85E-05	0.00E+00	3.02E-04	-1.65E-03
POCP	kg NMVOC eq	1.01E-03	1.94E-04	1.48E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.52E-05	0.00E+00	1.50E-04	-6.95E-04
ADP-minerals & metals*	kg Sb eq	5.30E-08	7.83E-09	2.89E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.82E-10	0.00E+00	1.60E-09	2.23E-08
ADP-fossil*	MJ	2.13E+00	3.66E-01	9.59E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.61E-02	0.00E+00	2.93E-02	-5.75E+00

Results per 1 linear meter (m) of ready to install decorative wall product

		Product stage			Construction stage		Use stage							End of life stage				Resource recovery stage
		Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
Indicator	unit	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
WDP*	m ³ depriv.	8.07E-03	1.18E-04	2.75E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.19E-05	0.00E+00	4.70E-05	-1.61E-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; MND = module not declared.																	

* 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 1 linear meter (m) of ready to install decorative wall product

Indicator	unit	Product stage			Construction stage		Use stage							End of life stage				Resource recovery stage
		Raw material	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	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
GHG-GWP***	kg CO ₂ eq	1.97E-01	2.59E-02	5.03E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.55E-03	0.00E+00	1.21E-01	-2.52E-01
PM	disease inc.	1.34E-08	2.03E-09	2.70E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.23E-10	0.00E+00	3.51E-09	-7.42E-09
ETP-fw*	CTUe	1.96E+00	1.57E-01	7.82E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.66E-02	0.00E+00	1.22E+00	2.42E+00
HTP-nc*	CTUh	1.66E-09	2.65E-10	3.45E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.98E-11	0.00E+00	1.83E-09	-5.03E-10
HTP-c*	CTUh	4.61E-11	7.90E-12	1.66E-10	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.27E-13	0.00E+00	2.33E-10	-1.68E-11
SQP*	Pt	1.13E-01	1.75E-03	1.24E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.74E-04	0.00E+00	9.41E-02	3.15E-02
IRP**	kBq U-235 eq.	9.00E-03	1.61E-03	9.89E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.55E-04	0.00E+00	1.69E-04	1.98E-04
Acronyms	GWP-GHG = Global Warming Potential Greenhouse Gas (IPCC 2013, AR5); PM = Particulate Matter emissions; ETP-fw Eco-toxicity (freshwater); HTP-nc = Human toxicity, non-cancer effects; HTP-c = Human toxicity, cancer effects; SQP = Land use related impacts / Soil quality; IRP = Ionizing radiation, human health; MND = module not declared.																	

* 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.

** This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

***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 1 linear meter (m) of ready to install decorative wall product

Indicator		Unit	A1	A2	A3	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Primary energy resources - Renewable	Use as energy carrier	MJ, net calorific value	3.66E-01	4.45E-04	2.63E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.39E-05	0.00E+00	2.67E-03	1,67E-01
	Use as raw materials	MJ, net calorific value	1.12E-01	0.00E+00	-3.98E-01	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2,51E-02
	Total	MJ, net calorific value	4.78E-01	4.45E-04	2.23E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.39E-05	0.00E+00	2.67E-03	1,33E-01
Primary energy resources - Non-renewable	Use as energy carrier	MJ, net calorific value	3.02E-01	3.88E-01	2.23E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.83E-02	0.00E+00	3.10E-02	1,62E-01
	Use as raw materials	MJ, net calorific value	1.96E+00	0.00E+00	8.07E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6,35E+00
	Total	MJ, net calorific value	2.26E+00	3.88E-01	1.03E+01	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.83E-02	0.00E+00	3.10E-02	-6,19E+00
Secondary material		kg	5,45E-01	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels		MJ, net calorific value	0,00E+00	0.00E+00	1.78E-02	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels		MJ, net calorific value	0,00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water		m3	2,89E-03	8.38E-06	1.78E-02	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.36E-07	0.00E+00	1.14E-05	-2.80E-03

Waste production and output flows

Waste production

Results per 1 linear meter (m) of ready to install decorative wall product

Indicator	Unit	A1	A2	A3	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0
Non-hazardous waste	kg	2.81E- 02	0.00E+0 0	3.08E- 03	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	5.05E- 01	0.00E+0 0
Radioactive waste	kg	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0

Output flows

Results per 1 linear meter (m) of ready to install decorative wall product

Parameter	Unit	A1	A2	A3	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for reuse	kg	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0
Material for recycling	kg	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	8.50E- 02
Materials for energy recovery	kg	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0
Exported energy, electricity	MJ	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0
Exported energy, thermal	MJ	0.00E+0 0	0.00E+0 0	0.00E+0 0	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0	0.00E+0 0

Information on biogenic carbon content

Results per functional or declared unit

BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	-
Biogenic carbon content in packaging	kg C	-

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Additional information

To the date of the data collection for this LCA (i.e., July 2020 to March 2021), the solvent-based painting route was responsible by 73% of all the products manufactured by Santa Luzia, while the remaining products were based on the water-based painting. However, Santa Luzia have been constantly growing its operation to the water-based painting and aims to achieve almost 100% of their products manufactured via water-based painting in the next few years. This commitment is in line with the current certification process from which Santa Luzia has been going through to obtain the ISO 14001 certification.

Therefore, on this section we also declare the environmental profile of the products per painting route following the cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

Results per 1 linear meter (m) of ready to install decorative wall product				
		Average profile	100% water-based	100% solvent-based
Indicator	Unit	Modules A1-A3 + C1-C4 + D	Modules A1-A3 + C1-C4 + D	Modules A1-A3 + C1-C4 + D
GWP-total	kg CO ₂ eq	6.92E-01	6.81E-01	6.96E-01
GWP-fossil	kg CO ₂ eq	5.40E-01	5.32E-01	5.43E-01
GWP-biogenic	kg CO ₂ eq	1.39E-01	1.37E-01	1.40E-01
GWP-luluc	kg CO ₂ eq	1.25E-02	1.22E-02	1.27E-02
ODP	kg CFC11 eq	6.05E-08	5.95E-08	6.08E-08
AP	mol H+ eq	2.77E-03	2.69E-03	2.80E-03
EP-freshwater	kg P eq	7.66E-06	7.28E-06	7.80E-06
EP-marine	kg N eq	7.64E-04	7.54E-04	7.68E-04
EP-terrestrial	mol N eq	7.73E-03	7.63E-03	7.76E-03
POCP	kg NMVOC eq	2.16E-03	2.09E-03	2.18E-03
ADP-minerals&metals	kg Sb eq	2.97E-06	2.47E-06	3.16E-06
ADP-fossil	MJ	6.40E+00	6.34E+00	6.43E+00
WDP	m ³ depriv.	1.23E-01	1.20E-01	1.24E-01
PM	disease inc.	3.88E-08	3.78E-08	3.91E-08
ETP-fw	CTUe	1.36E+01	1.34E+01	1.37E+01
HTP-nc	CTUh	6.73E-09	6.43E-09	6.85E-09
HTP-c	CTUh	4.37E-10	4.04E-10	4.50E-10
SQP	Pt	1.48E+00	1.44E+00	1.49E+00

Low Volatile Organic emission

We understand that healthy materials contribute to life quality of environments occupants. Our profiles have been tested and approved (Polystyrene profiles VOC = 2.87 g/L) according to the California Department of Public Health (CDPH), standard V1.1 (2010). For that reason, they contribute to score in LEED projects in the category of Indoor Environmental Quality.

Substances of very high concern (SVHC)

These products contain no substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency in a concentration that exceed 0.2% (w/w).

References

BSI (2019) EN 15804+A2:2019 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. British Standard.

EPD (2021) General programme instructions for the International EPD® System. Version 4.0.

EPD (2020) Construction products – PCR 2019:14 version 1.1

ISO (2006a) 14040: Environmental Management - Life Cycle Assessment - Principles and Framework.

ISO (2006b) 14044: Environmental Management - Life Cycle Assessment - Requirements and guidelines.

Santa Luzia (n.d.) Products catalog.

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