ENVIRONMENTAL PRODUCT DECLARATION

2020

APR-20

healthy living solutions

BLB INDÚSTRIAS METALÚRGICAS, S.A.

www.blb.pt/en

This report describes BLB's performance in its production process to promote the development of sustainable building elements.

ENVIRONMENTAL PRODUCT DECLARATION

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About Us

Introduction and Policy of the company.

BLB - Indústrias Metalúrgicas, S.A is dedicated to the production and commercialisation of bathtubs, shower trays, wash basins and panels of vitreous enamel steel and several sanitary accessories. BlB has always developed this activity with the purpose of supplying products of high quality while continuously improving its environmental performance. Today BLB integrates sustainability as a fundamental value of the Company's position.

IThe Company is therefore committed to:

- Manage its resources in order to guarantee the adequate technological development, offering a more cost effective and optimised productivity with the aim of achieving the levels of intended growth and integrating the variable sustainability in order to meet the needs of modern society without compromising future resources.
- Satisfy the customer requirements and expectations.
- Adopt the principles of continuous improvement of the various levels of the Quality and Environment Managing System in order to improve performance.
- Promote the personal and professional development of its collaborators encouraging initiative spirit, innovation, improvement and environmental awareness.
- Minimize the environmental impacts deriving from its activity, particularly those associated with the consumption of raw materials and energy, and the production of dangerous waste, adopting for the purpose sustainable practices in production processes and in the research and design of new products.
- Assume the Reduction, Reuse and Recycling of waste and use of natural resources as inseparable elements of daily activities.

BLB is dedicated to the production and commercialisation of bathtubs, shower trays, wash basins and panels.

- Keep betting on new technologies which allow prevention of pollution resulting from its activity, whenever suitable and economically viable.
- Comply with all legal requirements applicable to its products and environmental aspects, including other requirements that might be subscribed having in mind interested parties expectations.
- Encourage our suppliers to develop products that satisfy demands regarding levels of product quality and environmental requirements.

SCOPE

This document is a Environmental Product Declaration by making it referenced; EN 15804:2012+A2:2019 (Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products. Describe BLB's performance in its production process (cradle-to-door with options) to promote the development of sustainable building elements. All relevant environmental data have been used.

Product description

BLB produces Vitreous enamel steel bathtubs, shower trays, wash basins and panels (CPC code 4291 – Domestic metal products, according to the UN Central Product Classification).

Product standards:

- EN 14516 Baths for domestic purposes.
- EN 14527 Shower trays for domestic purposes.
- EN 14688 Sanitary appliances - Wash basins - Functional requirements and test methods.
- EN 232 Baths - Connecting dimensions.
- EN 251 Shower trays - Connecting dimensions.
- EN 31 Wash basins - Connecting dimensions.
- EN 10 209 Cold rolled low carbon steel flat products for vitreous enamelling - Technical delivery conditions.
- EN 15804 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

There is a great variety of different models and sizes:

- BLB bathtubs range comprises rectangular and oval shapes with dimensions between 1050x700mm up to 1800x800mm and with depths between 320 up to 420mm. The water capacity is between 80 dm3 and 210 dm3.
- Regarding BLB shower trays range includes square, rectangular and quarter circle shapes, starting from 700x700mm up to 1600x900mm and with depths between 35 and 160mm.
- BLB wall-hung, countertop and under-countertop wash basins includes rectangular shapes from 600x430 mm up to 1200x500mm and circular/oval shapes from 500 to 550mm.
- BLB paneling system offers versatility in the bathroom, permitting the bathtub to be replaced without any damages to the oor and wall tiles. The strong points of this system is the easy and clean installation as well as the fact that the Vitreous Enamel Steel panels (from 700x420 up to 1800x470mm) match perfectly with the bathtub, porcelain sanitary ware, tiles and enclosures giving it an harmonized appearance in your bathroom and which accompany the range of baths.

Regarding overall thickness BLB produces two ranges of thickness, standard gauge and heavy gauge products.

“The content of this report on BLB’s environmental sustainability consists of a description of the manufactured products and an analysis of their life cycle and operational flowchart to observe where the company can operate and how do it.

Vitreous enamel steel information

The life cycle of vitreous enamel steel products is very long (30 years of useful lifetime has been considered for the study) due to its resistance properties to corrosion (weather, saline atmosphere, and water steam) and to chemical products (alkalis, acids and cleaning agents) as well as to scratches and abrasion.

steel

Steel is a crystalline arrangement where iron atoms represent more than 99%, carbon atoms less than 1% and that includes addition elements. Quality and quantity of addition elements and their combinations originates several ranges of steel.

These additional elements include metals such as titanium, manganese, aluminium, nickel and niobium. The presence of manganese and niobium increase the resistance to corrosion and wear while aluminium and titanium provide hardness.

Steel represents 93 % of the composition of final product.

enamel

Enamel is defined as a mass that solidifies in the form of glass after fusion at high temperature between 1000 and 1300ºC. The composition is inorganic and its main constituent is Silica $SiO2$.

The remaining constituents include four important groups: Refractories that give the mechanical strength; Fluxes like Borax and alkaline oxides; Adhesion agents that are metal oxides and finally Opacifiers and colouring agents.

The composition of enamel is characterized by its high resistance to temperature changes, abrasion, and to chemical products. Enamel represents 7% od the composition of final product.

durability

The life cycle of vitreous enamel steel products is very long (the value of 30 years of useful lifetime has been considered for the study) due to its resistance properties to corrosion (weather, saline atmosphere, and water steam) and to chemical products (alkalis, acids and cleaning agents).

Similarly to glass, enamel surface is very hard, being extremely resistant to scratch, abrasion, impact and wear. The minimum life time of enamelled products is 30 years. The resistance to temperature (from -60 up to 500ºC) and to fire is also an important property to point out regarding vitreous enamel steel.

Also important to mention are the good dielectric properties and the fact that ultraviolet rays do not affect vitreous enamel steel colours neither the gloss of the surface.

aesthetic

A wide range of colours and surface textures can be produced also including the possibility of screen printing

hygiene

One of the major advantages is the fact that enamelled surfaces avoid the proliferation of bacteria, does not absorb odours, and besides that is very easy to clean.

ecological sustainability product 100% recyclable

The production process of vitreous enamel steel bathtubs and shower trays is mainly inorganic (Steel *and Glass**), therefore more environmentally friendly than plastic (organic - Crude oil).

Our vitreous enamel steel products are 100% recyclable , and at the end of their product life cycle go straight back into steel production as raw materials.

*Steel – Made from Iron Ore and Coke (carbon).

** Glass – Made from Sand (quartz).

technologically advanced enamel formulation

BLB has always worked directly with the world's leading suppliers of enamels and steel, allowing us to have a dedicated team of engineers, chemists, designers, technicians and manufacturing operators constantly working in creating synergies in order to formulate specialized enamels and steel to produce our specific physical characteristics.

Care instructions

Care instructions for bathtubs and shower trays with anti-slip

The care instructions for steel bathtubs or shower trays made with Vitreous enamel steel with anti-slip are basically the same as for the enamel without anti-slip. Due to the special non-slip surface, the following cleaning instructions are to be observed.

- The following are suitable for cleaning: mild vinegar and neutral cleaning agents, mild bathroom cleaning agents, pile fabrics, lint-free cloths. After cleaning, rinse thoroughly with plenty of water and dry with a chamois leather. A soft hand brush may be used to remove persistent dirt and marks.
- The following are not suitable for cleaning: abrasive or solvent-based cleaning agents, aggressive acids and lyes (e.g. vinegar essences, alkaline chlorine-based cleaning agents) abrasive cleaning sponges/ cloths, coloured cleaning agents, saturated disposable cloths

Care instructions for Vitreous enamel steel bathtubs, shower trays or wash basins and panels

- After use, rinse the surface with water and wipe with a damp cloth, chamois or sponge.
- Remove light marks with a mild household detergent or mild all-purpose cleaner; soak heavier marks for around 15–20 minutes before cleaning.
- Calcium deposits may be avoided by ensuring that all fittings are properly sealed and that all water is removed after use. Any calcium deposits that do occur can be removed with a hand-hot 1:1 solution of vinegar and water. After cleaning, rinse the surface thoroughly. Do not use coarse, abrasive powder cleaners or highly acidic cleaners. Always observe the care instructions for the fittings on your product.
- When using a drain cleaning product, please read the manufacturer's instructions carefully and pour the cleaner directly into the wastepipe. Immediately remove any cleaner that may have splashed onto the enamel.

Our Process

The raw materials used in manufacturing BLB products are provided by highly qualified suppliers capable of meeting the necessary demands in terms of quality

BLB integrates the quality principles in the company policy, in order to achieve efficient processes on organisation, and to be supported by high skilled and trained technical and production teams as well as to settle meticulous controls of raw materials, processes and products

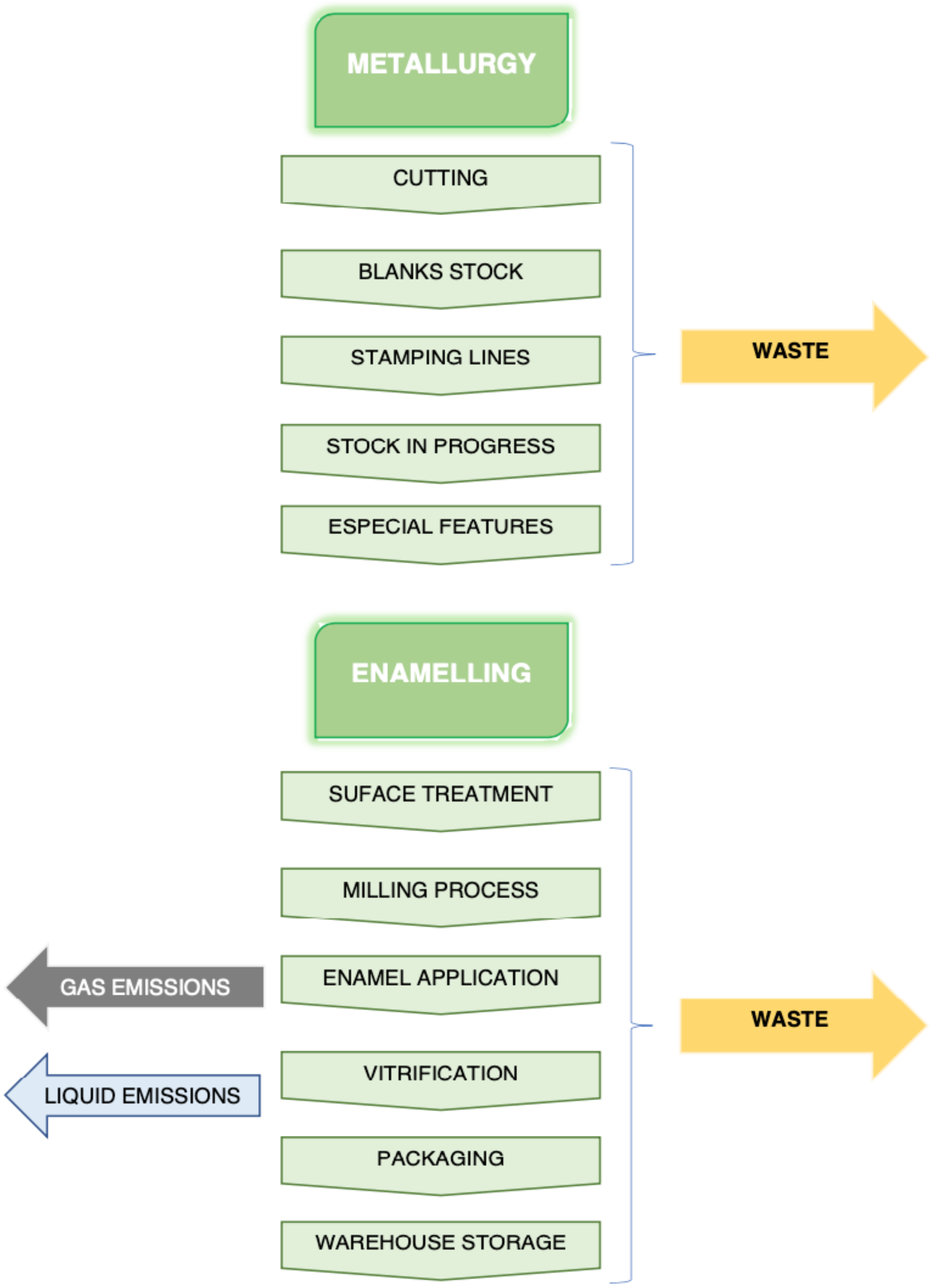
The production of Vitreous enamel steel bathtubs, shower trays, wash basins and panels includes the processing and use of the following materials:

- Cold rolled steel suitable for deep drawing and enameling, according to EN 10209 - Cold rolled low carbon steel flat products for vitreous enameling.
- Degreasing and oxidation protection products used in surface treatment;
- Frits, additives and pigments used for the production of enamels;
- Cardboard and wooden pallets used for product packaging.

Several controls and inspections take place along production following internal instructions of Quality Management System.

Flow Diagram of Production Process

Next figure shows manufacturing flow diagram of BLB products.



01

RAW MATERIALS

BLB's main raw materials are provided by qualified suppliers, and upon reception of materials an inspection is made regarding the requirements that are defined for each product. Main raw-materials, such as steel and enamel, are also tested in laboratory before being approved for production.

02

CUTTING LINE

According to the model of bathtubs and shower trays to be produced, a coil of steel is placed in the dispenser in order to initiate the cutting process to obtain plain sheets (blanks) of steel of the desired size. These blanks of steel are packed and stored for later use on the deep drawing lines.

03

DEEP DRAWING

This is one of the major operations of the entire manufacturing process. The plain sheets of steel are lubricated and shaped according to the model of bathtubs, shower trays and wash basin to be produced. Then, the excess material is cut, the edges are rimed, and the part is submitted to finishing operations, inspected before being placed on pallets.

04

SPECIAL FINISHING

The special features line is fully automatic and allows the production of special market or customer requirements such as tap holes, taps for handles, anti-slip or feet brackets.

05

SURFACE TREATMENT

This step, performed continuously in a closed tunnel, through a spraying process, includes hot alkaline degreasing followed by hot and cold-water rinsing and finally neutralization of steel surface using an oxidation protector. The main purpose is to clean the surface from oils and impurities, resulting from the stamping stage, and to neutralize the surface.

06

ENAMEL PRODUCTION

Performed according to specific formulas and takes place in industrial batch mills. The solid raw materials are weighted and charged into mills, together with water, and grinded for an adequate time. After, all enamels are submitted to control before storage in tanks, passing across sieves and magnetic separators to eliminate large frit and metal particles.

07

ENAMELING

Enamelling is the process of steel coating with enamel and is the second most important step of production. The process starts with enamel coating of both sides (backside and inside) of the raw pieces, which are sprayed with enamel frits. The spraying operations are performed by robots. A drying step follows to remove water just before firing in the furnace.

08

PACKAGING AND STORAGE

After final quality inspection all products are labelled, packed and stored at warehouse.

In the fabrication process, BLB performs routine quality checks and inspections in its own laboratories. Inspection controls are carried out at each stage of the production process and are also carried out on emissions and waste generated in this process.

Flow diagram system

A flow diagram was made to observe in which parts of the process BLB can act and thus achieve an environmentally sustainable production process

Flow Diagram System

The table shows the different stages of the life cycle according to the PCR. The MD letters marking some phases of the stages indicate module declared in EPD, while the letters MND indicate that the phase does not declared in EPD..

PRODUCT STAGE	RAW MATERIAL	A1	MD
	TRANSPORT	A2	MD
	MANUFACTURING	A3	MD
CONSTRUCTION PROCESS STAGE	TRANSPORT	A4	MD
	CONSTRUCTION	A5	MND
USE STAGE	USE	B1	MND
	MAINTENANCE	B2	MND
	REPAIR	B3	MND
	REPLACEMENT	B4	MND
	REFURBISHEMENT	B5	MND
	ENERGY USE	B6	MND
	WATER USE	B7	MND
END OF LIFE STAGE	DE-CONSTRUCTION	C1	MND
	TRANSPORT	C2	MD
	WASTE PROCESSING	C3	MD
	DISPOSAL	C4	MD
RESOURCE RECOVERY STAGE	REUSE, RECOVERY, RECYCLING POTENTIAL	D	MND

A1 RAW MATERIAL

TThis module takes into account the extraction and processing of all raw materials and energy:

- Extraction and processing of steel (products and accessories).
- Extraction and processing of auxiliary materials (Oils, degreasing chemicals, WWST chemicals).
- Extraction and processing of enamel (frits, additives and pigments).
- Extraction and processing of packaging (Wood, Corrugated board, Plastic, Metal).

The data applied for the analysis of this first stage have been selected in part from the databases of SimaPro and others have been provided by suppliers (such as enamel production). For transport to the manufacturer, the data and SimaPro have been adapted to the distances provided by the suppliers.

A2 TRANSPORT TO MANUFACTURER

The A2 module includes the external transportation to the core processes and internal transport. The module considers road, boat and train and goods transported are steel, auxiliary materials, enamel and packaging within supply chain.

The data analyzed at this stage have been selected from SimaPro and adapted to the distances defined by BLB.

A3 MANUFACTURING

The manufacturing module includes the manufacturing of the product and packaging. This module includes the manufacturing of packaged products, the production of electricity, natural gas and fuels that feed these processes, and water supply, wastewater treatment and waste management at BLB. This process stars when components and materials come into the manufacturer facilities and finishes when sanitary wares leave the plant.

In this module have been analyzed both upstream and downstream the manufacturing data provided by BLB

A4 TRANSPORT

The A4 module covers the transportation form the production gate to the construction site. The transport of the manufactured elements to the construction process takes reference the data of the Simapro bases adapted to the requirements of BLB

C1 DISMANTLING

The dismantling of product is assumed to be very small and can be neglected.

C2 TRANSPORT

The transport to landfill is model in this module.

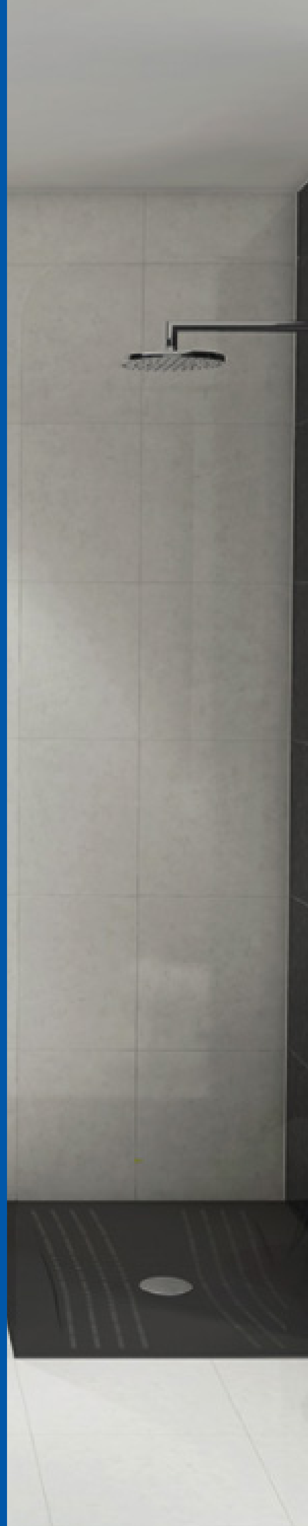
C3 WASTE PROCESSING

The product is considered to be landfilled with recycling.

C4 DISPOSAL

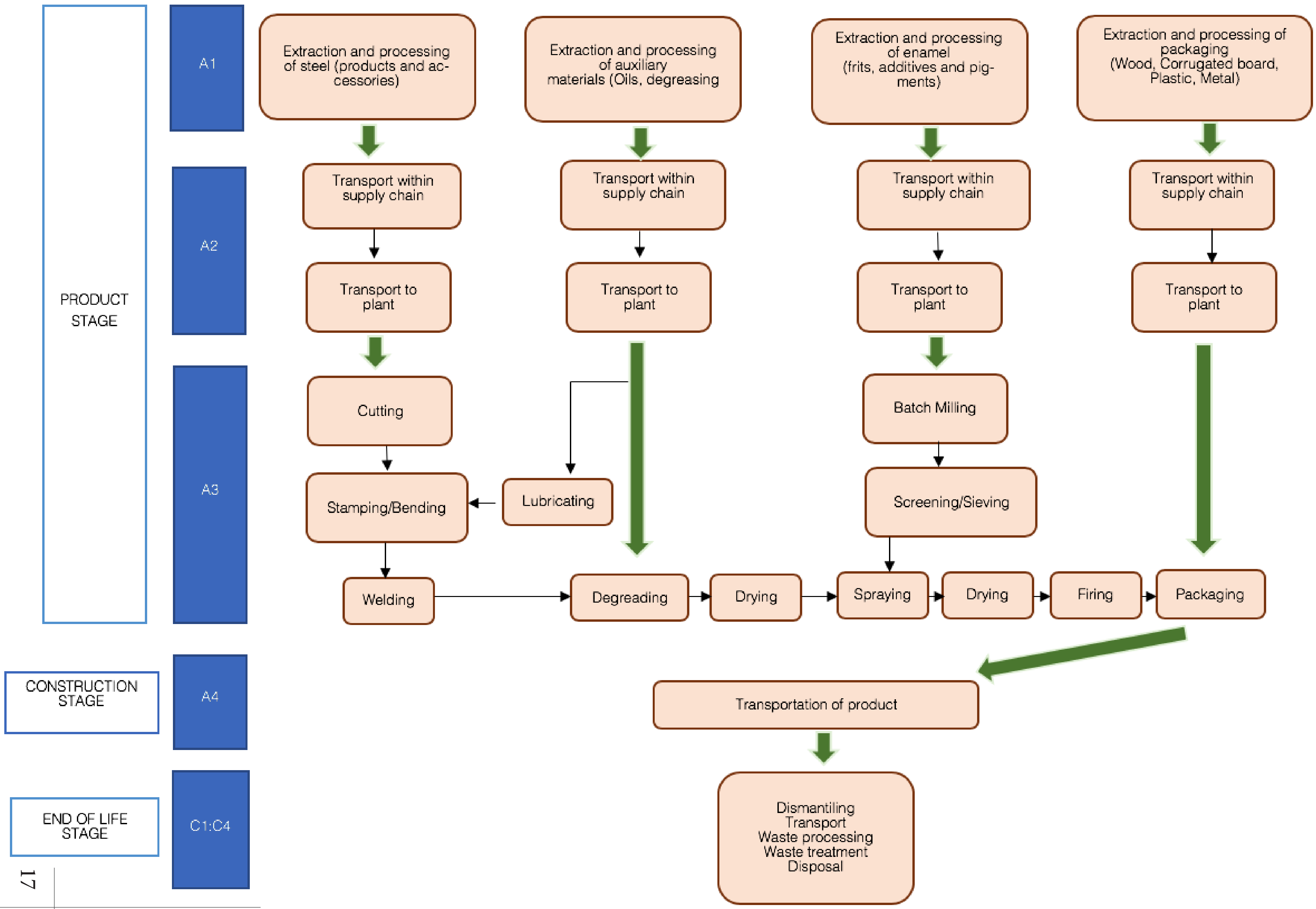
The product is 100% recyclable at the end life, as well as all packaging materials that are used.

The end-of-life stage has been analyzed with BLB-adapted SimaPro data and it has been considered that both the product and the packaging material are completely recyclable. Waste is supposed to be transported to landfill by 24-tonne truck, using diesel as fuel and with a cost of 38 liters per 100 km. It covers 30 km..



BLB acting diagram

Next figure summarizes the parts of the BLB-acting system diagram as well as the path that is followed to move from one to the other


PRODUCT STAGE
A1
A2
A3
CONSTRUCTION STAGE
A4
END OF LIFE STAGE
C1:C4
Extraction and processing of steel (products and accessories)
Extraction and processing of auxiliary materials (Oils, degreasing
Extraction and processing of enamel (frits, additives and pigments)
Extraction and processing of packaging (Wood, Corrugated board, Plastic, Metal)
Transport within supply chain
Transport within supply chain
Transport within supply chain
Transport within supply chain
Transport to plant
Transport to plant
Transport to plant
Transport to plant
Cutting
Batch Milling
Stamping/Bending
Lubricating
Screening/Sieving
Welding
Degreading
Drying
Spraying
Drying
Firing
Packaging
Transportation of product
Dismantiling
Transport
Waste processing
Waste treatment
Disposal

Life Cycle Assesment

An LCA was held to observe the activity of the company and where to act. Although some have been discussed in the flowchart, here are the characteristics of the BLB LCA:

- The functional unit is 1 m2 of Vitreous enamel steel bathtubs, shower trays, wash basins and panels, including packaging. This functional unit was adopted in order to cover the variety of models that are produced at BLB.

DATA ABOUT FUNCTIONAL UNIT	DESCRIPTION	WEIGHT (kg/m^2)
Product	1 m^2 of Steel enamelled surface	10.31
Packaging	Corrugated board	0.24
Total		**10.55**

- System limits are cradle-to-door with options. BLB can operate on the A1, A2, A3 and A4 modules defined above as well as in C1, C2, C3 and C4.

- To produce the LCA, an average period of time was analyzed, with the year 2017 chosen as the representative production period.

- The allocation criterion is based on the mass.

- The ACL was modeled with SimaPro 8.0.5 LCA software using the impact factors and the Ecoinvent database (V3.01).

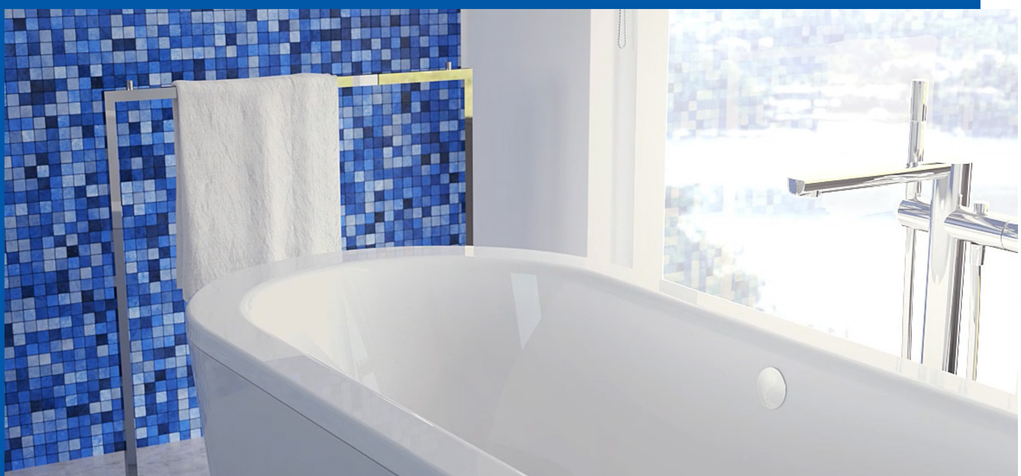
Life Cycle Assesment

The following table has collected the composition data in reference to the weight of the products sold by BLB. Data have been collected from packaging materials as well as auxiliary materials.

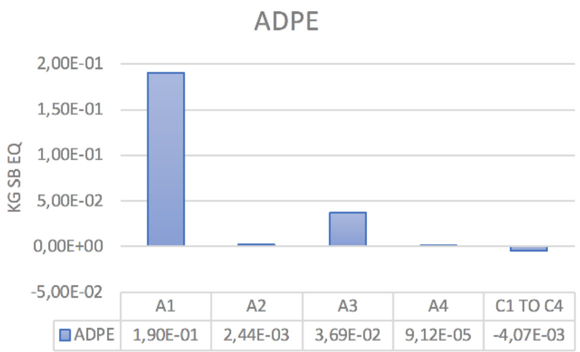
Raw material	Weight	Units
Cold rolled steel	1.20E+01	kg/m²
Enamel frits	9.01E-01	kg/m²
Total raw material	**1.29E+01**	kg/m²
Packaging Materials	**Weight**	**Units**
Corrugated board	2.43E-01	kg/m²
Wood	2.51E-01	kg/m²
Polyethylene (PEBD + PE)	4.98E-02	kg/m²
Polyethylene PEBD (anti-slip)	2.58E-04	kg/m²
Polypropylene film	1.92E-03	kg/m²
Nails (Steel)	1.04E-02	kg/m²
Paper (label)	1.20E-02	kg/m²
EPS (protectors)	1.01E-03	kg/m²
Cinta Polipropileno	1.16E-03	kg/m²
Textil Protector	3.10E-04	kg/m²
Total packaging material	**5.71E-01**	kg/m²
Auxiliary materials	**Weight**	**Unit**
Lubricant oil	2.72E-02	kg/m²
Alkaline degreaser	3.08E-03	kg/m²
Sodium hydroxide	6.34E-04	kg/m²
Aluminium chloride	3.17E-03	kg/m²
Hydrochloric acid	3.72E-03	kg/m²
Total auxiliary material	**3.79E-02**	kg/m²

The impact assessment results show that the most relevant potential impacts occur in the Product Stage, specifically, in the raw materials preproduction where the impact is mostly related to the life cycle of steel. For this reason, steel recycling is an important factor in the life cycle of BLB products, as they contribute to a possible significant reduction of the potential impacts.

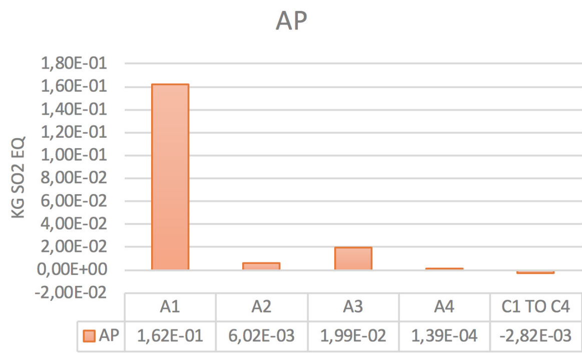
			Product stage			Construction process stage	End of Life stage
IMPACT CATEGORY	UNIT	**TOTAL**	Raw materials A1	Transport A2	Manufacturing A3	Transport A4	Transport to waste processing, Waste processing for recycling and Disposal C2 to C4
ADPE	kg Sb eq	**2,25E-01**	1,90E-01	2,44E-03	3,69E-02	9,12E-05	-4,07E-03
AP	kg SO2 eq	**1,86E-01**	1,62E-01	6,02E-03	1,99E-02	1,39E-04	-2,82E-03
EP	kg PO3-4 eq	**6,85E-02**	6,70E-02	6,28E-04	1,63E-03	1,78E-05	-7,78E-04
GWP	kg CO2 eq	**3,31E+01**	3,08E+01	3,49E-01	2,71E+00	1,25E-02	-7,16E-01
ODP	kg CFC11- eq	**1,53E-06**	1,10E-06	2,18E-08	4,31E-07	8,35E-10	-1,77E-08
POCP	kg C2H4 eq	**1,61E-02**	1,47E-02	1,96E-04	1,56E-03	4,57E-06	-4,21E-04
ADPF	MJ	**3,04E+01**	2,16E+01	6,28E-01	8,28E+00	2,41E-02	-2,10E-01
GWP; Global Warming Potential; ODP: Ozone Depletion Potential; AP: Acidification Potential; EP: Eutrophication Potential; POCP: Photochemical Ozone Creation Potential; ADPE: Depletion of Abiotic resources (elements); ADPF: Depletion of Abiotic Resources (fossil).							



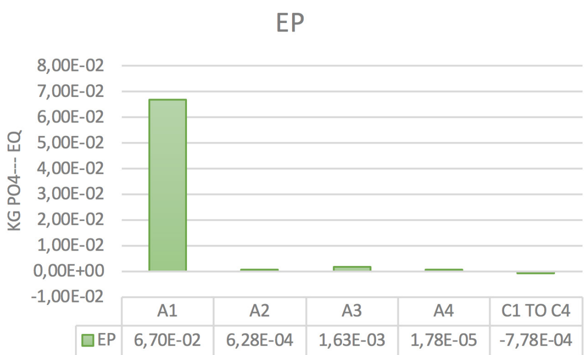
The data set out in next figures on the potential environmental impact are then collected and interpreted. Each phase studied is explained and the result is shown in terms of percentage (%).



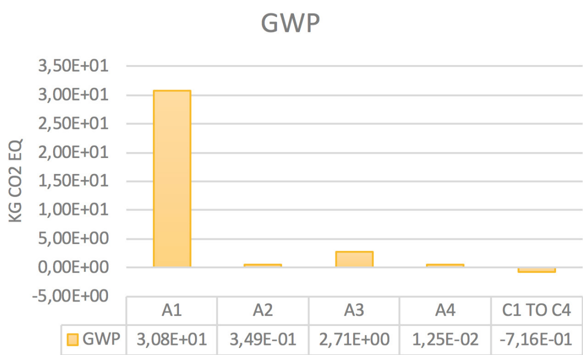
ADP elements Abiotic depletion potential (ADP element) is 2.25E-1 kg Sb-Equiv. of which 84.31% contribution is from raw materials extraction (A1). Steel preproduction contributes 76.58% total ADP element. Manufacturing stage contributes 16.37% of ADP elements. Raw enamel frits preparation and packaging preproduction contribute 5.43% and 2.01%, respectively. The transport to manufacturing industry (A2) is 1.08% and the transport to building (A4) is 0.04%. The emissions in the End of Life stage contribute -1.80%.



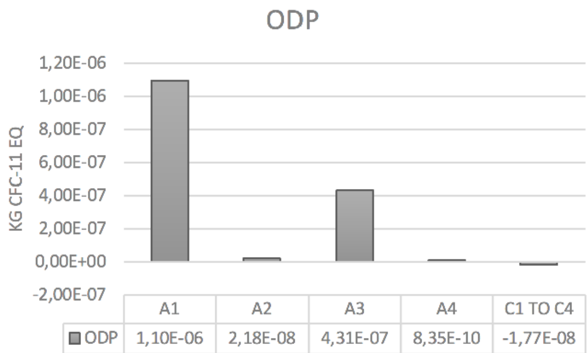
Acidification potential, expressed in kg of SO2 equivalents, is more relevant (87.45% of the potential impact) in the raw materials extraction (A1). Emissions contributing to this impact, similarly to what happens in the ADPE, occur mostly in the life cycle of steel preproduction (77.15%). The manufacturing (A3) weights about 10.75% of the total impact. Manufacturing emissions are due to the 2017 mix of BLB electricity supplier (85.71%) and due to the use of natural gas in the BLB manufacturing process (7.36%). The emissions in A2 shows 3.24% and A4 contributes 0.07%. The End of Life Stage avoids about 1.52% of the total impact.



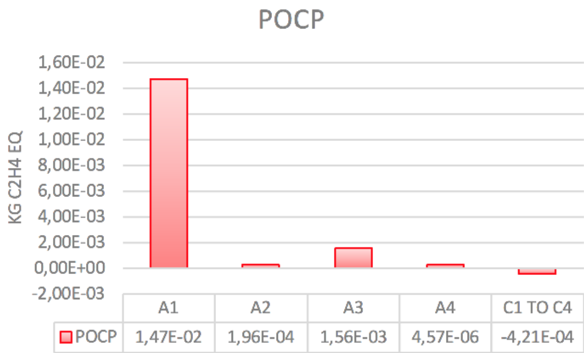
Eutrophication potential represents 6.85E-02 kg PO4-3 Equiv. The most relevant operation is Raw materials preproduction (A1) contributing 97.81%. The highest impacts in this module are the life cycle of steel (91.63%) and enamel frits (4.76%). About 2.38% of this impact is related to the Manufacturing process (A3). Concerning the transport modules, A2 contributes 0.92% and A4 0.03% of total impact. The EoL emissions reduces 1.14% the EP impact.



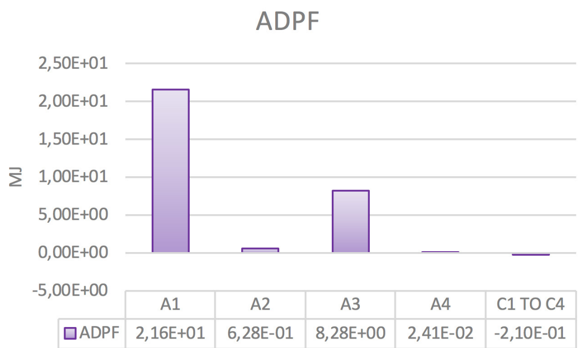
Global warming potential is 33 kg CO2 Equiv. The impact category is more relevant (approx. 92.89% of the potential impact) in the raw material extraction (A1). Greenhouse gases emissions contributing to this impact occur mostly in the life cycle of steel preproduction. About 85.75% of this impact is related to the production of steel and 5.55% is related to the enamel frits preproduction. Concerning the manufacturing process (A3) with 8.18%, about 69.32% of the impact is due to the 2017 mix of BLB electricity supplier and about 15.07% is because of the use of natural gas in the BLB manufacturing process. The emissions in A2 and A4 transport module are 1.05% and 0.04%, respectively. And, the end of life of BLB components avoids almost 2.16% of the total impact.



Ozone Depletion Potential is 1.53E-06 CFC-11 Equiv. of which 71.53% contribution is from raw materials preproduction (A1), where life cycle of steel is 61.79%, enamel frits is 7.23% and packaging 1.69%. A3 module (Manufacturing) contributes 28.15%. Manufacturing emissions are due to the use of natural gas in the BLB manufacturing process (70.20%) and the 2017 mix BLB electricity supplier (25.92%). The transport (A2) is 1.42% and Transport (A4) is 0.05%. The EoL of BLB components avoids 1.16% of the total impact.



Photochemical ozone creation potential (1.61E-02 expressed in kg of ethene equivalents), is more relevant (almost 91.65% of the potential impact) in the raw materials preproduction (A1). Emissions contributing to this impact, similarly to what happens in the rest of impact categories, occur mostly in the life cycle of steel (87.79%) and enamel frits (4.84%). The manufacturing process (A3) weights about 9.73% of the total impact. Concerning the transport modules, A2 contributes 1.22% and A4 0.03% of total impact. The EoL emissions reduces 2.62% the POCP impact.



Depletion of Abiotic Resources (fossil) is 30,37 MJ. The raw material preproduction (A1) contributes 71.29% of total ADPF impact. Here, the steel and enamel frits processes are the most relevant with 60.84% and 6.44%, respectively. The Manufacturing (A3) is 27.25% due to the use of natural gas (70.16%) and the 2017 mix of BLB electricity supplier (24.42%). The transport to manufacturing industry (A2) is 2.07% and the transport to building (A4) is 0.08%. End of Life Stage avoids 0.69% the total impact of ADPF.

Next tables show the results obtained in the LCA in terms of different relevant environmental components, as well as the indicators describing the category of waste.

Resource usage

		Parameters (Unit per functional unit)				
		Use of renewable primary energy excluding renewable primary energy resources used as raw materials	Use of renewable primary energy resources used as raw materials	Total use of renewable primary energy resources (MJ)	Use of non-renewable primary energy exclusding non-renewable primary energy resourses used as raw materials	Use of non-renewable primary energy resources used as raw materials
Raw materials	A1	6,64E-01	0,00E+00	6.64E-01	1,17E+00	0,00E+00
Transport	A2	0,00E+00	0,00E+00	0.00E+00	2,84E-02	0,00E+00
Manufacturing	A3	0,00E+00	0,00E+00	0.00E+00	4,86E+01	0,00E+00
Transport	A4	0,00E+00	0,00E+00	0.00E+00	3,08E-02	0,00E+00
Deconstruction	C1 to C4	0,00E+00	0,00E+00	0.00E+00	2,07E-05	0,00E+00

		Total use of non-renewable primary energy resources (MJ)	Use of secondary material (kg)	Use of renewable secondary fuels (MJ)	Use of non-renewable secondary fuels (MJ)	Use of net fresh water (m3)
Raw materials	A1	1.17E+00		0.00E+00	0.00E+00	3.88E-04
Transport	A2	2.48E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Manufacturing	A3	4.86E+01	4.25E-02	0.00E+00	0.00E+00	1.34E-02
Transport	A4	3.08E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Deconstruction	C1 to C4	0,00E+00	0,00E+00	0.00E+00	2,07E-05	0,00E+00

Waste category

		Hazardous waste disposed (kg)	Non-hazardous waste disposed (kg)	Radioactive waste disposed (kg)
Raw materials	A1	4.09E-03	2.43E02-	0.00E+00
Transport	A2	0.00E+00	0.00E+00	0.00E+00
Manufacturing	A3	2,27E-03	4.10E-03	0.00E+00
Transport	A4	0.00E+00	0.00E+00	0.00E+00
Deconstruction	C1 to C4	0.00E+00	1.06E+01	0.00E+00

Conclusions

Following the Environment Policy, BLB has a program where each year several environment goals and targets are settled and lead to improved performance regarding environmental system.

The company intends each year to reduce the consumption of raw materials, water and energy (inputs), as well as, emit as little liquids and gases (outputs) as possible. To do this, use upstream the best techniques available. Reducing hazardous waste is another primary objective in the BLB manufacturing process.

On the other hand, BLB has implemented good practices such as internal recycling of materials and waste with the purpose of reducing the global waste production.

In BLB- "Industrias Metalúrgicas", steel scrap recycling involves re-melting to produce new steels with little or no change in its inherent properties and, thus, for most cases recycling can be regarded as being closed loop. According to ISO 14044 (p. 15), 'in such cases the need for allocation is avoided since the use of secondary material displaces the use of virgin (primary) materials'. This guidance provides the basis for the 'closed material loop' recycling methodology.

It is necessary to take into account the benefits of recycling steel at the end of its life in order to calculate the credit of the useful system: the credit is given on the basis of 1 kg of quantity and corresponds to the demand for reduced inflows when recycling such steel to produce new products.

To accurately establish the environmental impact of steel manufacture, the World Steel Association uses the 'system expansion' method of life-cycle assessment. This is the most comprehensive assessment method currently available and is the preferred approach of the ISO 14040 series of environmental standards.

The next table shows the results of the impact avoided with credit of steel:

	ADPE	AP	EP	GWP	ODP	POCP	ADPF
	kg Sb eq	kg SO2 eq	kg PO4-3 eq	kg CO2 eq	kg CFC-11 eq	kg C2H4 eq	MJ
TOTAL (without credit of Steel)	2,25E-01	1,86E-01	6,85E-02	3,31E+01	1,53E-06	1,61E-02	3,04E+01
Credit for recycling of steel (85%)	1,47E-01	1,22E-01	5,34E-02	2,42E+01	8,04E-07	1,17E-02	1,57E+01
TOTAL (with credit of Steel)	7,87E-02	6,39E-02	1,52E-02	8,99E+00	7,27E-07	4,35E-03	1,47E+01
Impact avoided with credit of steel (%)	**65%**	**66%**	**78%**	**73%**	**53%**	**73%**	**52%**

Researches done by the company and collaborating companies have been effective in these events. The environmental study carried out over the period 2014 proved to be very useful in avoiding the impact of different product categories. In three years (study that was re-carried out in the period 2017) the company managed to reduce the impact of ODP, AP, POC, EP and GWP among others, the most notable being the latter and achieving emission levels of 33 kg of CO2 eq in 2017 compared to 39 in 2014, assuming a saving of 20%.

BLB has also managed to become more competitive in the use of non-renewable energy, reducing the amount used in 2017 to less than 40% of the total used in 2014. The following table lists the final data of the EPDs developed for BLB and the improvement of the results.

This Environmental Product Declaration was prepared by CO2Consulting, S.L.: http://www.co2co.es/en/

Use of resources (per functional unit)	**Unit**	**EPD Data 2014**	**EPD Data 2017**
Water use	L	5431,86**	137,8
Non renewable energy resources (gross calorific value)	MJ	427,23	49,82
Renewable energy resources (gross calorific value)	MJ	26,10	6,64E-01
Category Indicators (per functional unit)	**Unit**	**EPD Data 2014**	**EPD Data 2017**
Global Warming Potential (100 years)	kg CO2 eq	3,89E+01	3,30E+01
Ozone Layer Depletion Potential (steady state)	kg CFC-11 eq	1,27E-06	1,53E-06
Acidification Potential	kg SO2 eq	1,99E-01	1,86E-01
Photochemical Ozone Creation Potential	kg C2H4 eq	1,30E-02	1,61E-02
Eutrophication Potential	kg PO4 eq	3,05E-02	0,68E-02

***This refers mostly to water consumption in hydroelectric energy production*

Carrying out its work based on the standard "UNE-EN 15804:2012+A1:2014 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products", BLB has managed to avoid a great impact on the environment, energy savings and emissions reduction, as a company that is very productively efficient and has reasonable environmental sustainability.

2020

ENVIRONMENTAL PRODUCT DECLARATION

healthy living solutions

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The company has a certified quality management system (ISO 9001) since 1998 an environmental management system (ISO 14001) since 2003.