



ENVIRONMENTAL PRODUCT DECLARATION

In accordance with EN 15804 + A1 and ISO 14025

STAMPED PRE PAINTED STEEL CEILING PLATE

Date: 04 December 2018
Version: 1
Valid until: 20 November 2023

GABELEX



The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.

Registration number
The International EPD® System:
S-P-01331

General information

The information in this statement is provided under the responsibility of Gabelex (producer of the EPD) according to EN 15804 + A1.

Any use, total or partial, of the information provided in this document should at least be accompanied by the full reference of the original EPD and its associated documents.

EN 15804 + A1 serve as rules for defining product categories (PCR).

Reading Guide

Reading example: $-9,0 \text{ E } -03 = -9,0 \times 10^{-3} = 0.0009$

The following display rules apply:

- When the result of calculation of the inventory is zero, then zero is displayed.
- When the module is not declared, the value "MNA" is displayed

Manufacturer: Gabelex -

Programme used: International EPD System <http://www.environdec.com/>

PCR identification: EN 15804 as the core PCR + The International EPD® System PCR 2012:01 version 2.2 for Construction Products and construction services with reference to the Saint Gobain Environmental Product Declaration Methodological Guide for Construction Products

Site of manufacture: Gabelex, Monte Largo Aldão - Apartado 113, Guimarães, Portugal

Product / product family name and manufacturer represented: Gabelex Stamped Pre-painted Steel Ceiling Plate, from the following product groups:

GAB STANDARD 1, GAB STANDARD 2, R241, R242, R152, R243, R244, R154, CLIP-IN 1 FLEX, CLIP-IN 3 FLEX, CLIP-IN 1 FLEX BASCULANTE, CLIP-IN 3 FLEX BASCULANTE, CLIP-IN 1. Metal ceilings, perforated or non-perforated, with or without acoustic fleece.

Declaration issued: 04 December 2018

Valid until: 20 November 2023

Demonstration of verification: an independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by the following third party; Yannick Le Guern, based on the PCR mentioned above.

All the result presented in this EPD are compliant with background report supply to the verifier.

EPD Prepared by: Delphine DRAY, Saint-Gobain Eurocoustic. Contact: Delphine.Dray@saint-gobain.com

Declared Unit: The Declared unit is 1m² Gabelex Stamped Pre-painted Steel Ceiling Plate with a weight of 4.3 kg/m² and a thickness of 0.5 mm

Declaration of Hazardous substances: (Candidate list of Substances of Very High Concern): None

Scope: Portugal and Spain

CEN standard EN 15804 serves as the core PCR^a

Independent verification of the declaration, according to EN ISO 14025:2010

Internal

External

Third party verifier: Yannick Le Guern

Product description and use:

Acoustic metal suspended ceilings for use in corridors and / or office spaces.

The product is made of more than 98 % of steel, the other components are paint and for some product an acoustic veil.

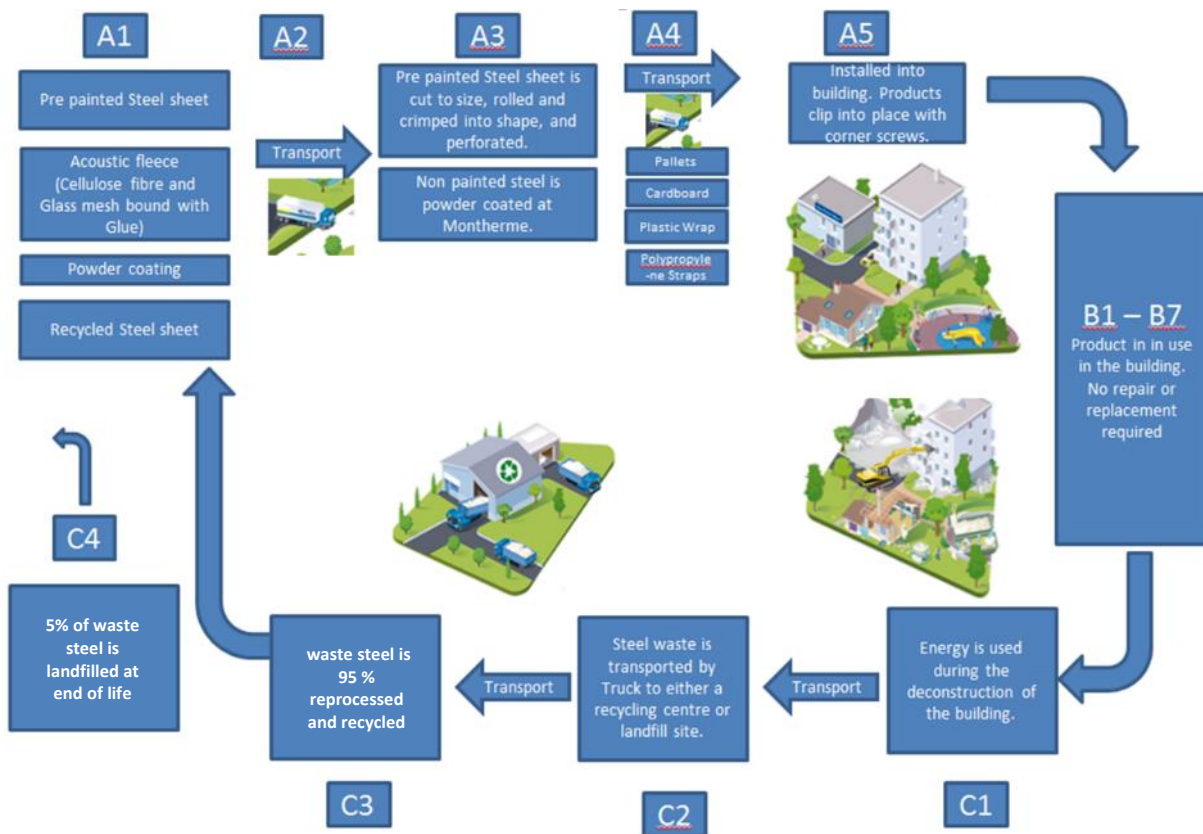
Given the properties of the steel and the coating, the ceiling plates manufactured are robust and have a high fire performance. In addition to that, the perforation and lining of metal ceilings contribute to sound absorption in order to create acoustic comfort.

Gabelex ceilings can be fully recycled at end of life. They are sustainable, easy to maintain, produce no dust, and are inert and odor-free. They do not promote microbial growth.

LCA calculation information

EPD TYPE DECLARED	Cradle to Grave
DECLARED UNIT	1 m ² Gabelex Stamped Pre-painted Steel Ceiling Plate with a weight of 4.26 kg/m ² .
SYSTEM BOUNDARIES	Cradle to Grave: Mandatory stages A1 – 3, A4 – A5, B1 – 7, C1 – 4 and Module D. This EPD covers the environmental impact of ceiling plate without grid or suspension system
REFERENCE SERVICE LIFE (RSL)	50
CUT-OFF RULES	In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than the 5% of the whole mass and energy used, as well of the emissions to environment occurred. Flows related to human activities such as employee transport are excluded. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
ALLOCATIONS	Production data. Recycling, energy and waste data have been calculated on a mass basis.
VARIABILITY	The variability of the results is estimated to be +/- 25%.
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Scope includes Portugal and Spain Data included is collected from one production site, Guimarães Cradle to grave. Specific data was collected at the site for the reference year 2017 Background data are provided by Ecoinvent V3.3 or Thinkstep and are less than 10 years old
PRODUCT CPC CODE	42190
CONTENT DECLARATION	No substances of very high concern.
ADDITIONAL INFORMATION	Regarding the indoor environment, the fleece is ranked A+ according to the decree of 19 April 2011 on the French labeling of construction products or wall or floor coating and paints and varnishes on their volatile pollutant emissions. The fleece also fulfills the class E1 of the standard EN 14342:2005 for formaldehyde emissions

According to ISO 21930, EPDs might not be comparable if they are from different programmes. EPD of construction products may not be comparable if they do not comply with EN 15804



Life cycle stages

Product stage, A1-A3

Description of the stage:

A1, raw material extraction and processing, processing of secondary material input (e.g. recycling processes). This includes the extraction and processing of all raw materials and energy, which occur upstream from the manufacturing process.

A2, transport to the manufacturer. The raw materials are transported to the manufacturing site. The modelling includes road, boat and/or train transportation of each raw material.

A3, manufacturing, including provision of all materials, products and energy, as well as waste processing up to the end-of-waste state or disposal of final residues during the product stage. This module includes the manufacture of products and the manufacture of packaging. The production of packaging material is taken into account at this stage. The processing of any waste arising from this stage is also included.

Manufacture:

Gabelex uses pre painted steel coils for the production of pre painted metal ceilings. These coils are unrolled, perforated and then stamped and cut to desired lengths. Thereafter, an acoustic fleece can be bonded to the back of the panels on request.

Construction process stage, A4-A5

Description of the stage:

A4, transport to the building site,

A5, installation into the building, including provision of all materials, products and energy, as well as waste processing up to the end-of-waste state or disposal of final residues during the construction process stage. These information modules also include all impacts and aspects related to any losses during this construction process stage (i.e. production, transport, and waste processing and disposal of the lost products and materials).

Transport to the building site:

PARAMETER	VALUE (expressed per functional/Functional unit)
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Truck, diesel, Average 27 tons payload. Driving share 70% motorway, 23 % rural, 7% urban.
Distance	493 (km)
Capacity utilisation (including empty returns)	85 %
Volume capacity utilisation factor	1

Installation in the building:

PARAMETER	VALUE (expressed per functional/Functional unit)
Ancillary materials for installation (specified by materials)	Not considered
Water use	None
Other resource use	None
Quantitative description of energy type (regional mix) and consumption during the installation process	None modelled
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	0,21 kg of steel 0,161 kg of packaging waste
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal (specified by route)	0,20 kg of steel for recycling (95%) 0,011 kg of steel send to landfill (5%) 0,161 kg of packaging waste landfilled 0,110 kg of wood pallet for re-use
Direct emissions to ambient air, soil and water	No direct emissions during installation.

Use stage (excluding potential savings), B1-B7

Description of the stage:

The use stage, related to the building fabric includes:

B1, use or application of the installed product;

B2, maintenance;

B3, repair;

B4, replacement;

B5, refurbishment, including provision and transport of all materials, products and related energy and water use, as well as waste processing up to the end-of-waste state or disposal of final residues during this part of the use stage. These information modules also include all impacts and aspects related to the losses during this part of the use stage

(i.e. production, transport, and waste processing and disposal of the lost products and materials).

Description of scenarios and additional technical information:

Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore, Ceiling products have no impact on this stage.

End-of-life stage C1-C4

Description of the stage: The end-of-life stage includes:

C1, de-construction, demolition;

The de-construction and/or dismantling of products take part of the demolition of the entire building. For ceiling tiles and grids the environmental impact is assumed to be very small.

Thermal energy for deconstruction is included at 0.05 MJ per kg of deconstructed material.

C2, transport to waste processing;

A distance of 50 km by truck has been taken into account

C3, waste processing for reuse, recovery and/or recycling;

A waste processing is taken into account. Waste are sorted and prepared for recycling, the energy use is 0,0586 MJ / kg of waste.

C4, disposal, including provision and all transport, provision of all materials, products and related energy and water use.

End-of-life:

PARAMETER	VALUE (expressed per functional/Functional unit) / DESCRIPTION
Collection process specified by type	4.26 kg collected with mixed construction
Recovery system specified by type	4.05 kg recycled
Disposal specified by type	0.21 kg disposed of in landfill
Assumptions for scenario development (e.g. transportation)	On average, metals waste is transported 50 km by road from construction / demolition sites to end of life treatment or disposal.

Reuse & Recovery – Module D

Description of the stage: Module D includes:

This product has a high end of life recycling potential and therefore modelling includes recycling of 95% of the product at end of life, and a subsequent material credit for the potential avoided impacts of steel manufacture.

LCA results

Description of the system boundary (X = Included in LCA, MNA = Module Not Assessed).





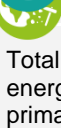



The Declared unit is 1 m² Gabelex of stamped pre-painted Steel Ceiling Plate with a weight of 4.27 kg/m².


Specific data has been supplied by the plant for the manufacturing year 2017, and generic data comes from the Thinkstep and Ecoinvent databases. The latest available modules have been used wherever possible.

All emissions to air, water, and soil, and all materials and energy used have been included, with the exception of long-term emissions (>100 years).

PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

RESOURCE USE




Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				Module D
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse & Recovery
 Use of renewable primary energy excluding renewable primary energy resources used as raw materials <i>MJ/FU</i>	1,36E+01	1,60E-02	6,71E-01	0	0	0	0	0	0	0	1,88E-03	7,01E-03	1,32E-02	5,22E-03	4,02E+00
 Use of renewable primary energy used as raw materials <i>MJ/FU</i>	2,23E+00	0	1,11E-01	0	0	0	0	0	0	0	0	0	0	0	0
 Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) <i>MJ/FU</i>	1,58E+01	1,60E-02	6,71E-01	0	0	0	0	0	0	0	1,88E-03	7,01E-03	1,32E-02	5,22E-03	4,02E+00
 Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials - <i>MJ/FU</i>	1,09E+02	3,08E-01	5,71E+00	0	0	0	0	0	0	0	2,42E-01	1,40E-01	2,21E-01	4,47E-02	-5,76E+01
 Use of non-renewable primary energy used as raw materials <i>MJ/FU</i>	2,42E+00	0	1,21E-01	0	0	0	0	0	0	0	0	0	0	0	0
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) - <i>MJ/FU</i>	1,11E+02	3,08E-01	5,71E+00	0	0	0	0	0	0	0	2,42E-01	1,40E-01	2,21E-01	4,47E-02	-5,76E+01
 Use of secondary material <i>kg/FU</i>	6,36E-01	0	3,18E-02	0	0	0	0	0	0	0	0	0	0	0	0
 Use of renewable secondary fuels- <i>MJ/FU</i>	6,40E-05	0	3,29E-06	0	0	0	0	0	0	0	0	0	0	0	-2,95E-05
 Use of non-renewable secondary fuels - <i>MJ/FU</i>	5,66E-04	0	2,90E-05	0	0	0	0	0	0	0	0	0	0	0	-2,33E-04





 Use of net fresh water - m ³ /FU	8,93E-01	2,97E-05	4,48E-02	0	0	0	0	0	0	0	0	4,24E-06	1,30E-05	6,42E-05	8,48E-06	-3,44E-02
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OUTPUT FLOWS

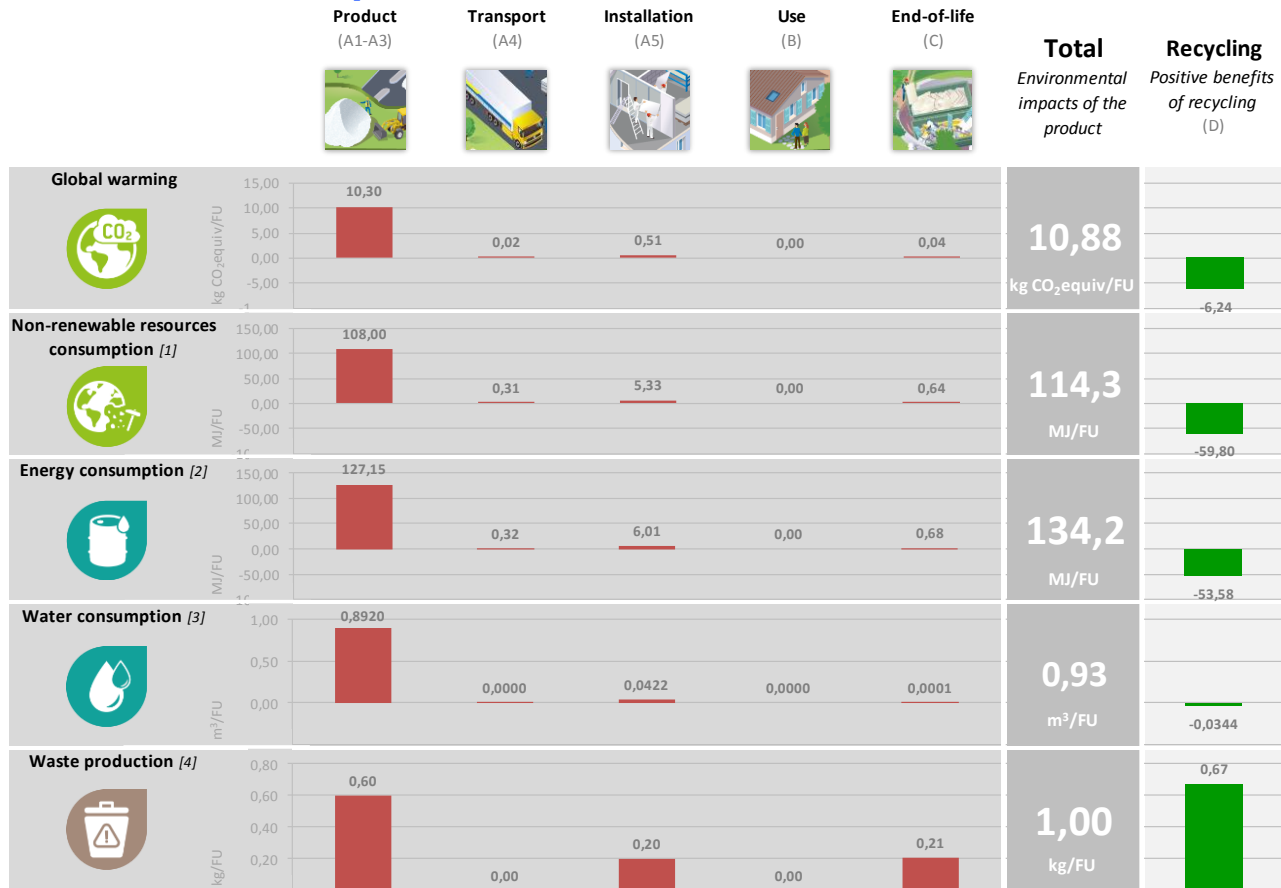
Parameters	Product stage	Construction process stage	Use stage								End-of-life stage				Module D
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WASTE CATEGORIES

Parameters	Product stage	Construction process stage		Use stage							End-of-life stage				Module D
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse & Recovery
 Hazardous waste disposed kg/FU	1,05E-05	1,60E-08	5,10E-07	0	0	0	0	0	0	0	1,55E-11	7,33E-09	6,50E-09	7,07E-10	-4,09E-06
 Non-hazardous (excluding inert) waste disposed kg/FU	5,99E-01	2,39E-05	1,98E-01	0	0	0	0	0	0	0	3,42E-05	1,07E-05	9,59E-05	2,13E-01	6,73E-01
 Radioactive waste disposed kg/FU	3,38E-04	4,36E-07	1,65E-05	0	0	0	0	0	0	0	6,56E-08	1,91E-07	3,23E-06	6,03E-07	2,01E-06

	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Recovery & Recovery
 Components for re-use <i>kg/FU</i>	0	0	1,10E-01	0	0	0	0	0	0	0	0	0	0	0	0
 Materials for recycling <i>kg/FU</i>	4,26E-01	0	2,23E-01	0	0	0	0	0	0	0	0	0	4,05E+00	0	0
 Materials for energy recovery <i>kg/FU</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Exported energy, detailed by energy carrier <i>MJ/FU</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LCA results interpretation



[1] This indicator corresponds to the abiotic depletion potential of fossil resources.

[2] This indicator corresponds to the total use of primary energy.

[3] This indicator corresponds to the use of net fresh water.

[4] This indicator corresponds to the sum of hazardous, non-hazardous and radioactive waste disposed.

Comments

The impacts associated with global warming are mainly related to the A1-A3 production stage. Indeed, the most important contribution at this stage is due to the supply of raw materials which includes the extraction of iron ore and the manufacture of steel coils. The other impacts result from the manufacture of ceilings.

A similar tendency is observed for the depletion of fossil abiotic resources and the use of primary energy resources. In the same way, the supply of raw materials and the manufacture of ceilings have a strong impact on these indicators.

Visible water consumption at the production stage is mainly related to the manufacture of steel coils.

During the installation (A5) the packaging waste generated are considered landfilled, it is for the major part cardboard which could be recycled but landfilling has been taken as a conservative approach. The component for re-use into the table (resources use - A5) is the pallet which is considered re-use 90% of time. Steel waste are considered recycled in majority.

Unlike other indicators, the quantity of waste disposed is essentially generated at the end-of-life stage C1-C4 but is very low since 95% of the product is recycled at the end of its life.

For recycling stage D, the negative values obtained for all the indicators refer to the impacts avoided by recycling the products. In fact, the recycling of products avoids the production of virgin steel (because recycling generates recovered material).

Indeed, the main advantage of the use of ceilings and metal grids is that the product is recyclable at the end of its life.

The steel production inventory used for calculating the EPD is representative of the metallic products placed on the European market and includes 13% of secondary material.

References

- NF EN 15804: 2012 + A1 2013 Sustainability of construction works, - Environmental Product declarations Core rules for the product category of construction products.
- Environmental Product Declaration: Saint-Gobain Methodological Guide for Construction products April 2013.
- ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
- Construction products and construction services 2012:01 version 2.0 valid until: 2019-03-03.
- ISO 21930:2007 Sustainability in building construction - Environmental declaration of building products.