Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Electro-welded lattice girder

from

Gallega de Mallas, S.L.

Programme:	The International EPD® System, www.environdec.com
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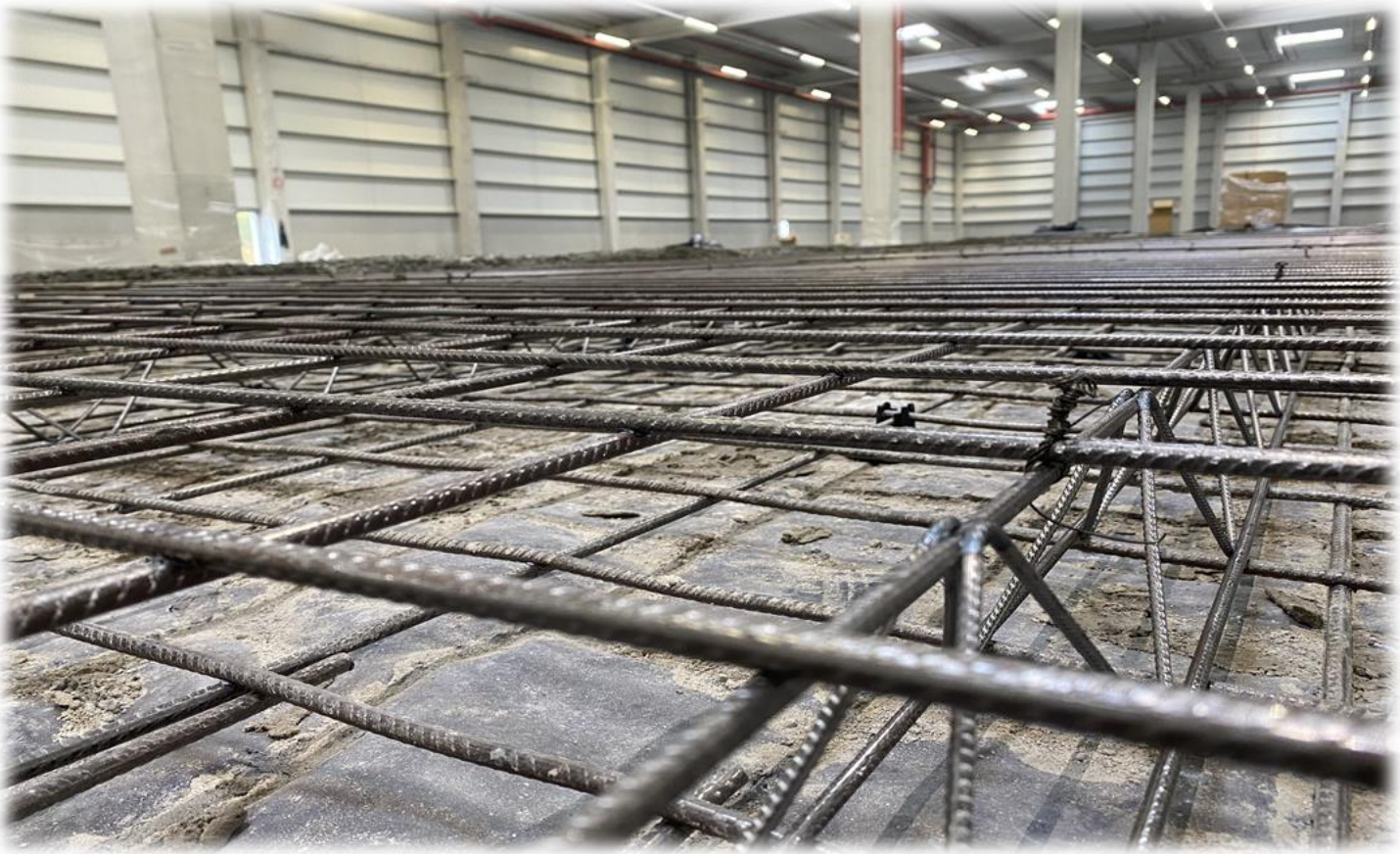

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): **PCR 2019:14** Construction products (EN 15804:2012+A2:2019/AC :2021) Version 1.3.2
The PCR review was conducted by: The Technical Committee of the International EPD ® System. Chair: No chair appointed. Contact via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: APPLUS – LGAI Technological Center S.A
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Marcel Gómez Ferrer | info@marcelgomez.com Approved by: The International EPD® System

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Gallega de Mallas, S.L.
Contact: Ismael Vieito, Ismael@galcore.es
Pozuelo de Alarcón
15105 Carballo - A Coruña (Spain)

Description of the organisation:

In 1985, Mr Manuel Añón Rey founded *Hierros Añón* in Laracha, A Coruña, from a rebar workshop and iron warehouse established by his father, Mr. Manuel Añón González. The company was initially dedicated to the commercialization of steel for construction, being an iron distributor with sales throughout Galicia. Then, after the closing of *Sidegasa* in 1986, they looked for new suppliers and established commercial relations with *Siderúrgica Nacional Portuguesa.*

In early 90´s, they began importing steel form England, Germany and Turkey to diversify their supply sources. In 1994, the privatization of *Siderúrgica Portuguesa* led to a decision to stop supplying iron to *Hierros Añón,* which prompted the company to focus even more on importing and approving steel.

At the en of 1994, **Gallega de Mallas, S.L.** was created, a company dedicated to the manufacture of electrowelded mesh and joist reinforcement with commercial success throughout Galicia and Spain in the b2b market. Faced with the lack of a constant supply of iron, *Hierros Añón* decided to manufacture its own steel and established *Siderúrgica Añón* in 2000.

Later, they were able to homologate their products, and in 2004, they acquired a modern steel mill, *Acieria de L´Atlantique*, in Bayonne, France. In 2006, *Siderúrgica añón do Brasil*, Ltda. Was incorporated.

In 2017 **Gallega de Mallas, S.L.** moved to new facilities in Carballo and acquired stakes in *Laminoirs des Landes, SA* and *Comercial de Laminados* from the German Group *Kloeckner.*

Gallega de Mallas, S.L. has a Production Plant in the Bértoa Industrial Estate (Carballo - A Coruña), on a plot of 51,079 m2 and with a covered surface area of 16,540 m2, it has one of the most modern and best equipped factories in the sector for the production of electrowelded mesh.
Its technology and facilities are focused on a single objective: to achieve a top-quality product that satisfies the demands of its customers. To achieve this, they apply what they have learnt over the last 30 years, acquiring new knowledge in their process of continuous improvement.

Product-related or management system-related certifications:
Certified by Applus in ISO 9001 with certificate nº: EC-9028/18 and accreditation nº: 02/C-S032 and DCOR "Officially Recognized Quality Distinctive" RD. 1247/2008 for the product: Steel for active reinforcement with certificate nº: PR-1791/088

Name and location of production site(s): Gallega de Mallas, S.L.
Polígono Industrial de Bértoa, parcela E2.
15105 Carballo - A Coruña (Spain)

Product information

Product name: Electro-welded lattice girder

Product identification: Electro-welded lattice girders, Steel for concrete reinforcement, weldable steel for reinforced concrete reinforcement, general. (UNE-EN 10080)

Product description:

The product **Electro-welded lattice girder**, from now on "Truss girders" is a vital construction element, consisting of interconnected beams. It efficiently distributes loads and provides stability to structures like roofs and bridges. Truss girders are lightweight yet strong, thanks to their strategic design. They come in various types, each suited for specific load-bearing needs. Made from materials like steel or aluminium, Truss girders endure tension and compression forces, ensuring stability. Truss girders are essential for creating safe, open spaces in modern construction.

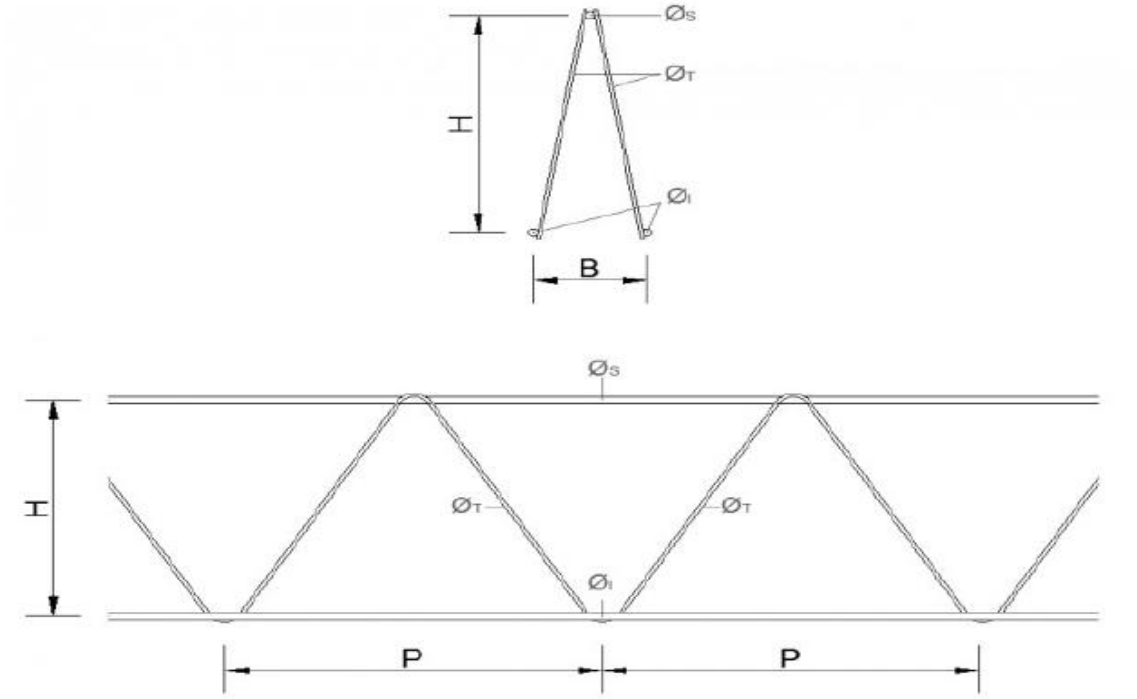
This product is third party verified by Applus according to the DCOR (Officially Recognised Quality Mark) and SPC-085 "Steel products for concrete", achieving great product capabilities.

TRUSS GIRDERS can be found in different proportions and dimensions, depending on the demand. The following table exemplifies the different product characteristics that can be found under Gallega de Mallas portfolio:

Designation	LONG FORMAT 12.800 (mm)							
	Height H *(mm)*	*Top* ØS *mm)*	*Lower* ØI *(mm)*	*Transverse* ØT *(mm)*	***Weight*** **Kg/m**	*Package* Uds.	mts.	Tm.
H08 666	**80**	6	6	4	**0,935**	88	1.126,4	1,053
H09 666	**90**	6	6	4	**0,947**	88	1.126,4	1,067
H09 676	**90**	7	6	4	**1,027**	88	1.126,4	1,157
H10 666	**100**	6	6	4	**0,960**	88	1.126,4	1,081
H10 676	**100**	7	6	4	**1,040**	88	1.126,4	1,171
H10 101010	**100**	10	10	4	**2,145**	88	1.126,4	2,416
H12 666	**120**	6	6	4	**0,988**	88	1.126,4	1,113
H12 676	**120**	7	6	4	**1,068**	88	1.126,4	1,203
H12 878	**120**	7	8	4	**1,414**	88	1.126,4	1,593
H12 888	**120**	8	8	4	**1,507**	88	1.126,4	1,697
H12 101010	**120**	10	10	4	**2,173**	88	1.126,4	2,448
H13 666	**130**	6	6	4	**1,003**	88	1.126,4	1,129
H14 666	**140**	6	6	4	**1,018**	88	1.126,4	1,147
H14 676	**140**	7	6	4	**1,098**	88	1.126,4	1,237
H14 676 Ø5	**140**	7	6	5	**1,294**	88	1.126,4	1,457
H14 888	**140**	8	8	4	**1,537**	88	1.126,4	1,731
H15 666	**150**	6	6	4	**1,034**	88	1.126,4	1,165
H17 666	**170**	6	6	4	**1,067**	88	1.126,4	1,201
H17 676	**170**	7	6	4	**1,147**	88	1.126,4	1,291
H17 686 Ø5	**170**	8	6	5	**1,462**	88	1.126,4	1,647
H18 676	**180**	7	6	4	**1,163**	88	1.126,4	1,310
H20 666	**200**	6	6	4	**1,118**	88	1.126,4	1,259
H20 666 Ø5	**200**	6	6	5	**1,369**	88	1.126,4	1,541
H20 676	**200**	7	6	4	**1,198**	88	1.126,4	1,349
H20 676 Ø5	**200**	7	6	5	**1,449**	88	1.126,4	1,632
H20 868	**200**	6	8	4	**1,464**	88	1.126,4	1,649
H20 878	**200**	7	8	4	**1,544**	88	1.126,4	1,739
H22 666	**220**	6	6	4	**1,153**	88	1.126,4	1,298
H22 676	**220**	7	6	4	**1,233**	88	1.126,4	1,389
H23 666	**230**	6	6	4	**1,171**	88	1.126,4	1,318
H23 676	**230**	7	6	4	**1,251**	88	1.126,4	1,409
H23 888	**230**	8	9	4	**1,690**	88	1.126,4	1,903
H24 676	**240**	7	6	4	**1,268**	88	1.126,4	1,429
H25 666	**250**	6	6	4	**1,207**	88	1.126,4	1,359
H25 666 Ø5	**250**	6	6	5	**1,507**	88	1.126,4	1,697
H25 676	**250**	7	6	4	**1,287**	88	1.126,4	1,449
H25 676 Ø5	**250**	7	6	5	**1,587**	88	1.126,4	1,787
H27 666	**270**	6	6	4	**1,243**	88	1.126,4	1,400
H28 666	**280**	6	6	4	**1,261**	88	1.126,4	1,421
H28 676	**280**	7	6	4	**1,341**	88	1.126,4	1,511
H28 888	**280**	8	8	4	**1,780**	88	1.126,4	2,005
H30 666	**300**	6	6	4	**1,298**	88	640,0	0,831
H30 666 Ø5	**300**	6	6	5	**1,650**	88	640,0	1,056
H30 676	**300**	7	6	4	**1,378**	88	640,0	0,882

Taking into consideration that:

ØT = 4,0 / 5,0 (mm)	**B = 90 (mm)**	**P = 200 (mm)**



UN CPC code: **4126** Bars, rods, angles, shapes and sections, cold processed of further worked, of iron or steel; angles, shapes and sections, hot-rolled, hot drawn or extruded, of alloy steel; steel wire. According to the Statistical document "Central Product Classification (CPC) Series M No. 77, Ver.2.1.

Geographical scope: Coverage of Global raw materials and transportation (A1-A2), Spanish technologies and processes during the Production process stage (A3) and European coverage during the Transport, Usage, End of Life Stage and Resource Recovery Stage (A4, C and D).

Applicable test and characteristics of the Truss Girders are the following:

TRUSS GIRDERS		
Characteristics **UNE-EN 10080 / UNE-EN 15630-1 / UNE-EN 15630-2 / UNE 36740**	**Unit**	**Value**
MECHANICAL PROPERTIES		

Elastic limit (Rp0.2)	MPa	≥ 510
Tensile strength (Rm)	Mpa	≥ 565
Relation (Rm/Rp0.2)	%	≥ 1.03
Elongation at break (A)	%	≥ 8
SHEAR IN THE WELD		
Nominal diameter	mm	ø4 - ø5 - ø6 - ø8 - ø10 - ø12
Minimal breakout force	A	1602 - 2503 - 3605 - 6409 - 10014 - 14420
ADHERENCE		
τbm	MPa	Ø < 8 = 6.88 Mpa; 8 ≤ Ø ≤ 32 = 7.84-0.12Ø; 32 < Ø = 4
τbu	MPa	Ø < 8 = 11.22; 8 ≤ Ø ≤ 32 = 12.74-0.19Ø; 32 < Ø = 6.66
GEOMETRY OF THE CORRUGATIONS		
Nominal diameter	mm	ø4 - ø5 - ø6 - ø8 - ø10 - ø12
Minimum height of corrugations	mm	0.14 – 0.18 – 0.22 – 0.29 – 0.36 – 0.50
Maximum separation between corrugations	mm	3.0 – 3.8 – 4.5 – 6.0 – 7.5 – 8.5
Perimeter without corrugations (sum)	mm	3.04 -3.80 – 4.56 – 6.24 – 7.60 – 7.20
Angle of corrugations (tracing)	º	35-65 | 35-65 | 35-65 | 35-65 | 35-65 | 35-75
SIMPLE BENDING TEST		
Nominal diameter	mm	ø4 - ø5 - ø6 - ø8 - ø10 - ø12
Chuck diameter	mm	12 - 15 - 18 - 24 - 30 - 36(30)
CHEMICAL COMPOSITION		
On "Colada"	%	[C=0.22], [S=0.05], [P=0.05], [N=0.12], [Cu=0.8], [Ceq=0.5]
On Product	%	[C=0.24], [S=0.055], [P=0.055], [N=0.14], [Cu=0.85], [Ceq=0.52]

LCA information

Declared unit: In the present study, the declared unit is considered being 1 ton of Electro-welded lattice girder. According to UNE 36904-2:2018. The reference unit to express environmental information is 1000 kg of basic construction steel product.

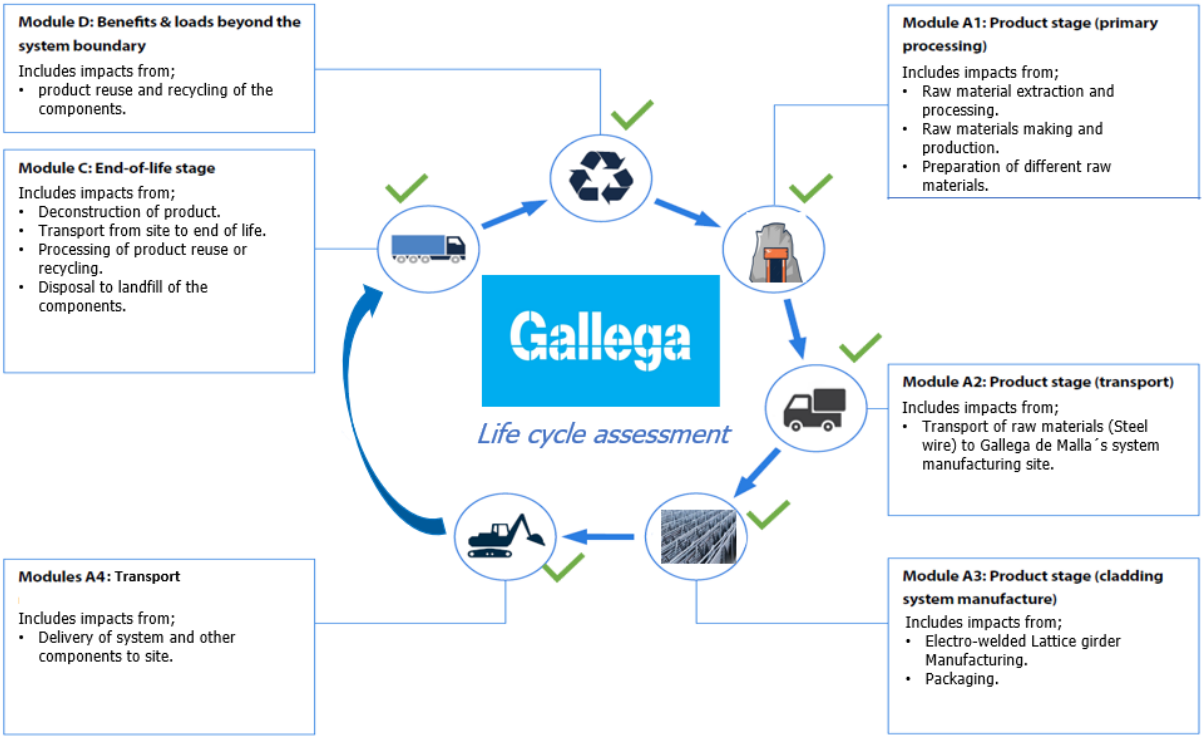
Reference service life: The RSL used in this EPD is 50 years. According to the UNE 36904-2 standard: "The reference useful life of the structure in which the products under consideration are located". The product is placed in construction structures and, according to the concrete structural code information, its useful life is 50 years.

Time representativeness: The data collected are for the year 2022, based on the production from the same year.

Database(s) and LCA software used: The LCA database profile is EcoInvent version 3.6 (September 2019) and the LCA software is SimaPro 9.1.1 with the characterization method based in EN 15804 + A2 Method v1.0.

Description of system boundaries: The scope of the Declaration and the limits of the system apply from "Cradle to gate with options" covering all information modules A1 to A4, C1 to C4 and D.

System diagram:



The life cycle analysis is based on the EN 15804:2012+A2:2019/AC :2021 standard, where the following cutting criteria are applied:

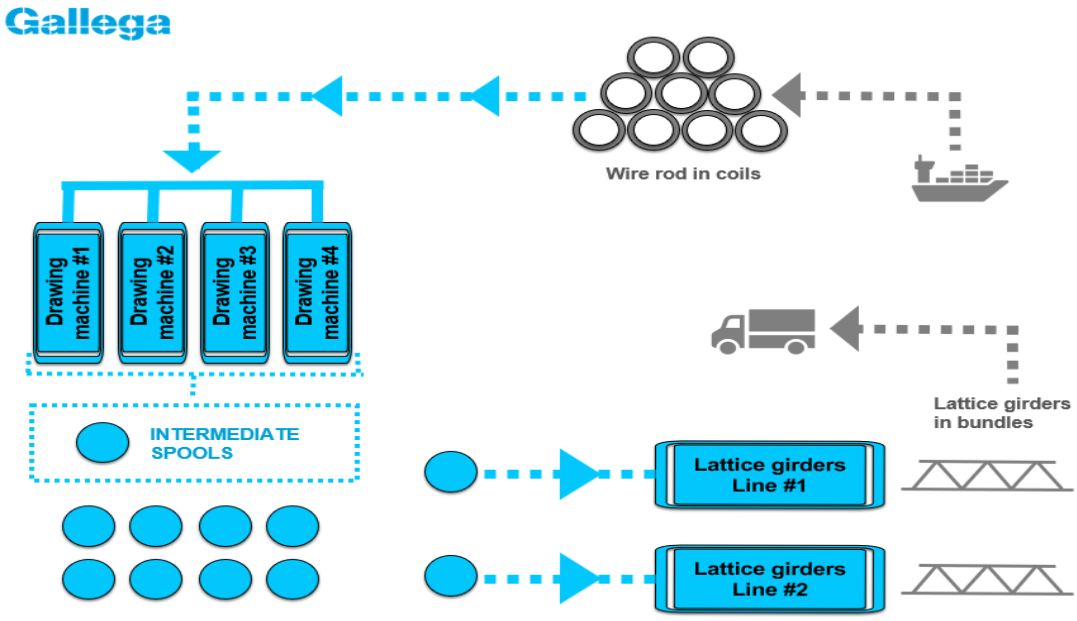
PRODUCT STAGE (A1 - A3): The production stage consists of the extraction of raw materials, transportation of the raw materials, processing the raw materials into materials and the production of the product. The required energy for production, external treatments, ancillary materials, packing material and production emissions are included, energy consumed comes from ES energy supplier and it´s specific energy mix, with a value of 0.267 kg CO eq/kWh. The limits of the system to nature are related between the resources derived from petroleum and the Technosphere in the production of Truss girders, where most of its content is Steel.

With regards to the production process of the Stages A1-A3, it can be described as the following:
To produce electro-welded lattice girders, also known as truss girders, Gallega de Mallas begins with steel wire rod in coils, with different chemical compositions and diameters depending on the product to be manufactured. The raw material, most of which is moved on cargo ships, is stored at the manufacturer's facilities in piles according to diameter, supplier, and type of steel. To ensure correct behavior during further processing, the wire rod must remain for a week in an enclosed location protected from the weather, thus achieving a dry surface. All movements between the wire rod yard, the drying room, and the wire drawing machines are carried out using forklift trucks.

The first industrial process carried out is wire rod drawing, in which the cross-section of the wire rod is reduced, and the mechanical properties of the different grades produced are achieved. Drawing is carried out by means of cold-rolling cassettes. Each cassette is fitted with a series of lamination rolls, arranged in sets of three, which produce a progressive reduction of the steel cross-section. In the last step, in addition to reduction, the wire is indented or corrugated: a series of marks are printed on the surface of the steel, aiming to improve the adherence between the reinforcement steel and the concrete in which it is embedded. The depth and geometry of these marks are adjusted to each diameter and specification produced in the factory. Throughout the process, temperatures are controlled by cooling the wire using a cold water closed circuit. It is also necessary to apply a powder lubricant, which requires a wire rod surface free of rust and scale. This surface is achieved by mechanical descaling, without the use of chemicals.

The wire drawn is then coiled on 5-tonne spools, constituting an intermediate product that feeds the lattice girders welding lines in the factory. The spools are placed in a pay-off stand with several winders. Each coil that is placed in one winder corresponds to one of the wires that constitute the lattice girder (upper wire, lower wires, and diagonals). Throughout the process, different moving parts of the machine shape the diagonals, straighten the upper and lower wires, and synchronize the wire feed. In the last part of the process, a head claps all the elements together and, by applying an electric current, each wire is welded to the diagonals. The electric current flowing, the time during which it is applied, and the mechanical pressure involved define the strength of the weld and the degree to which the steel is affected. The process keeps going until the desired length of the element is reached; at that moment, the entire lattice is cut.

Once the lattice girders have been produced, they are stacked and tied in bundles of several units, depending on their size and weight. Once they have been discharged from the machine, they are labeled and transferred to the corresponding piles, awaiting dispatch to the customer. 100% of the product is stored in the warehouse, protected from the weather. All handling operations are carried out using overhead cranes equipped with special tools.
The production process is represented in the following system diagram:



CONSTRUCTION PROCESS STAGE (A4 - A5): This stage consists of transporting the product from Gallega´s production plan to an average distance of their buyers during the 2022. It also includes the loss of material during construction. This includes additional production required, transportation, and end-of-life material lost during construction.
It also includes the end of the useful life of the packaging material until the end of the state of disposal or final waste disposal. Installation of the product, including manufacturing, transportation, and end-of-life of auxiliary materials and any use of energy or water necessary for the installation or operation of the product construction works are considered.

Stage A4 - Transport to construction site: It includes transport from the production site to a central warehouse where it will be further distributed. During this stage, no transport losses are assumed.

SCENARIO INFORMATION	VALUE/DESCRIPTION
Type of vehicle used for transport	Lorry (Truck) > 32t, EURO4
Vehicle lead capacity	> 32 Ton
Fuel type and consumption	Diesel: 30L/100km
Distance to the site	500 km
Capacity of utilization (including empty returns)	Default value from Ecoinvent 3.6
Bulk density of transported products	Kg/m^3
Volume capacity utilization factor	Not Applicable

END OF LIFE STAGE (C1 - C4): When the end of the product life stage is reached, the deconstruction begins. This EPD includes deconstruction (C1), which includes the removal of the building's floor covering, including the initial on-site selection of materials; necessary transportation (C2) from the deconstruction site to the sorting location and the distance to final disposal. The end of life stage includes final landfill disposal (C4), where the waste is disposed of, which includes physical pre-treatment and management at the disposal site, waste processing (C3), being the incineration and necessary recycling processes to the final point of disposal.

BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D): This stage contains the potential loads and benefits of recycling and re-use of raw materials/products. The loads contain the needed recycling processes from end-of-wastepoint up to the point-of-equivalence of the substituted primary raw material and a load for secondary material that will be lost at the end-of-life stage.
The loads and benefits of recycling and reuse are included in this module. The benefits are calculated based on the primary content and the primary equivalent.

SCENARIO INFORMATION	VALUE/DESCRIPTION
Collection process specified by type	Reinforcing steel (i.a. metals): 1000 kg with mixed construction waste.
Recovery system specified by type	0 kg for Incineration
	950 kg for Recycling
	0 kg for Re-use
Elimination specified by type	50 kg disposal to landfill
Assumptions for scenario development (e.g. transport)	Lorry (Truck), unspecified (default) | market group for (GLO) Distance to landfill 100 km, to incineration 150 km and to recycling 50 km

In addition, the benefits of energy recovery are granted at this stage. The amount of avoided energy is based on the Lower Heating Values of the materials and the efficiencies of the incinerators as mentioned in the NMD Determination method v1.0 or EcoInvent 3.6 (2019).

Therefore, it will be considered that in this EPD, of all the previously declared cut criteria, only modules **"A1-A4"; "C1-C4" and "D"** are declared; being the minimum required by the EN 15804:2012+A2:2019/AC :2021 standard.

Data quality: All process-specific data was collected for the 2022 operating year and is therefore up-to-date.

The data is obtained from the company and verified by **APPLUS - LGAI Technological Center S.A**

The generic data were taken from the database EcoInvent (version 3.6). The data quality assessment covers geography representativeness, technology representativeness and time representativeness, and is based on the data quality criteria from the Annex E, Table E.2 of EN 15804:2012+A2:2019/AC :2021. The data quality overall can be classified as very good. Geographically. the data are from A1 and A2 stages is global, from stage A3 is Euro and the rest stages (A4, C1, C2, C3, C4 and D) are European. Temporally, the data are current, from the year 2022, thus qualifying as very good. Technically, the same manufacturing system and machinery (drawing machines) is followed for the development of the products.

With regard to the exclusion criteria for inputs and outputs (cut-off rules), what is indicated in the UNE-EN 36904-2:2018 standard is considered, which indicates that If there is not enough information, the energy of the process and the materials that represent less than 1% of the total energy and mass used can be excluded (if they do not cause significant impacts). The sum of all excluded inputs and outputs cannot exceed 5% of the total mass and energy used, as well as the environmental emissions produced. The following processes have been excluded:

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

With other criteria, the polluter pays principle, the principle of modularity and that it does not consider the emissions generated in the long term have been considered.

The system's LCA calculation did not consider flows related to the construction of production plants, application machines and employee transport and the study cover at least 95% of the materials and energy per module and at least 99% of the total material and energy use of each unit process.

Allocation:
Whenever allocations could be avoided, primary data have been used. Where this has not been possible, mass-based physical allocations have been used.
The allocation for inputs of materials, such as raw materials or packaging materials, are direct.
The allocation for consumptions, such as energy, water and steam, have been allocated from 2022 production.

For production waste, only the packaging material of the Truss girders has been taken into account, knowing the kg that could be produced from it.

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

	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	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	Global	Global	ES	EU													EU
Specific data used	>90% GWP			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	0 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0 %			EU average for Gallega	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

This EPD is representative for one ton of **Electro-welded lattice girders** with the trade name Truss girders manufactured at the production site Gallega de Mallas, S.L.

The data for Truss girders has been used for the calculation as it is one of the main products manufactured by Gallega de Mallas.

The components for Gallega´s Truss girders product is detailed here and his explanation of each phase:

Products Component: Also known as raw material supply, The % for manufacturing one ton of Truss girders.

Packing Material: Includes amount of packaging materials used for one ton of the product.

Ancillary materials: Refers to those materials used during the life cycle of a product, but which are not directly part of the final product.

Energy consumption: Refers to the energy consumed to manufacture one ton of the product. From 2022 ES specific mix from energy supplier.

Product components	**Weight, %**	**Post-consumer material, weight, %**	**Biogenic material, weight, % and kg C/kg**
Steel Wire	98	17.51	0
Steel Wire 1	2	95	0
TOTAL	**100**	**19.05**	**0**
Packaging materials	**Mass per declared unit (kg/ton)**	**Weight, % (versus the product)**	**Weight biogenic carbon, kg C/ton**
High-strength steel strap	2.72E-01	0.27	0
TOTAL	**2.72E-01**	**0.27**	**0 kg C**

Hazardous Materials Content:
During the life cycle of the product, no dangerous substance included in the "List of substances candidates for authorization (SVHC)" in a percentage greater than 0.1% of the weight of the product.

RESULTS:
ENVIRONMENTAL INFORMATION

Electro-welded lattice girder

Results of the environmental performance indicators

Classification of disclaimers to the declaration of core and additional environmental impact indicators

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Mandatory impact category indicators according to EN 15804

** 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.*

Results of 1 ton Electro-welded lattice girder																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	2,32 E+03	4,52 E+01	ND	ND	ND	ND	ND	ND	ND	ND	6,95 E-01	7,09 E+00	0,00 E+00	2,63 E-01	-1,10 E+03
GWP-biogenic	kg CO_2 eq.	-1,87 E+00	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	3,46 E-03	1,86 E+00	1,14 E+01
GWP-luluc	kg CO_2 eq.	1,35 E+00	1,33 E-02	ND	ND	ND	ND	ND	ND	ND	ND	5,48 E-05	2,60 E-03	0,00 E+00	7,35 E-05	8,09 E-01
GWP-total	kg CO_2 eq.	2,32 E+03	4,52 E+01	ND	ND	ND	ND	ND	ND	ND	ND	6,95 E-01	7,09 E+00	0,00 E+00	2,64 E-01	-1,09 E+03
ODP	kg CFC 11 eq.	1,46 E-04	1,07 E-05	ND	ND	ND	ND	ND	ND	ND	ND	1,50 E-07	1,56 E-06	0,00 E+00	1,09 E-07	-2,68 E-05
AP	mol H^+ eq.	1,18 E+01	2,31 E-01	ND	ND	ND	ND	ND	ND	ND	ND	7,27 E-03	4,11 E-02	0,00 E+00	2,50 E-03	-4,23 E+00
EP-freshwater	kg P eq.	1,32 E-01	3,47 E-04	ND	ND	ND	ND	ND	ND	ND	ND	2,53 E-06	7,15 E-05	0,00 E+00	2,95 E-06	-3,88 E-02
EP-marine	kg N eq.	2,37 E+00	7,84 E-02	ND	ND	ND	ND	ND	ND	ND	ND	3,21 E-03	1,45 E-02	0,00 E+00	8,60 E-04	-7,85 E-01
EP-terrestrial	mol N eq.	2,71 E+01	8,64 E-01	ND	ND	ND	ND	ND	ND	ND	ND	3,52 E-02	1,60 E-01	0,00 E+00	9,50 E-03	-9,17 E+00
POCP	kg NMVOC eq.	1,15 E+01	2,58 E-01	ND	ND	ND	ND	ND	ND	ND	ND	9,68 E-03	4,56 E-02	0,00 E+00	2,76 E-03	-6,24 E+00
ADP-minerals&metals*	kg Sb eq.	3,88 E-02	7,77 E-04	ND	ND	ND	ND	ND	ND	ND	ND	1,07 E-06	1,80 E-04	0,00 E+00	2,41 E-06	-7,41 E-04
ADP-fossil*	MJ	2,55 E+04	7,08 E+02	ND	ND	ND	ND	ND	ND	ND	ND	9,57 E+00	1,07 E+02	0,00 E+00	7,36 E+00	-7,66 E+03
WDP*	m^3	7,32 E+02	2,30 E+00	ND	ND	ND	ND	ND	ND	ND	ND	1,28 E-02	3,82 E-01	0,00 E+00	3,30 E-01	-2,09 E+02
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															

Additional mandatory and voluntary impact category indicators

Results of 1 ton Electro-welded lattice girder															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	2,32 E+03	4,52 E+01	ND	ND	ND	ND	ND	ND	ND	ND	6,95 E-01	7,09 E+00	0,00 E+00	2,64 E-01	-1,09 E+03
ETP - fw	CTUe	1,03 E+05	5,64 E+02	ND	ND	ND	ND	ND	ND	ND	ND	5,77 E+00	9,53 E+01	0,00 E+00	4,77 E+00	-3,68 E+04
PM	disease incidence	1,97 E-04	4,21 E-06	ND	ND	ND	ND	ND	ND	ND	ND	1,93 E-07	6,37 E-07	0,00 E+00	4,86 E-08	-6,36 E-05
HTP - c	CTUh	1,87 E-05	1,39 E-08	ND	ND	ND	ND	ND	ND	ND	ND	2,01 E-10	3,09 E-09	0,00 E+00	1,11 E-10	-1,42 E-07
HTP - nc	CTUh	1,36 E-04	6,42 E-07	ND	ND	ND	ND	ND	ND	ND	ND	4,95 E-09	1,04 E-07	0,00 E+00	3,40 E-09	2,16 E-04
IR	kBq U235 eqv.	6,42 E+01	3,10 E+00	ND	ND	ND	ND	ND	ND	ND	ND	4,10 E-02	4,48 E-01	0,00 E+00	3,02 E-02	1,88 E+01
SQP	Pt	9,44 E+03	8,12 E+02	ND	ND	ND	ND	ND	ND	ND	ND	1,22 E+00	9,27 E+01	0,00 E+00	1,54 E+01	-1,69 E+03
Acronyms	**ETP-fw** = Ecotoxicity, freshwater; **PM** = Particulate Matter; **HTP-c** = Human toxicity, cancer; **HTP-nc** = Human toxicity, non-cancer; **IR** = Ionising radiation, human health; **SQP** = Land use.															

Resource use indicators

Results of 1 ton Electro-welded lattice girder															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,45 E+03	8,92 E+00	ND	ND	ND	ND	ND	ND	ND	ND	5,17 E-02	1,34 E+00	0,00 E+00	5,95 E-02	2,23 E+02
PERM	MJ	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PERT	MJ	2,45 E+03	8,92 E+00	ND	ND	ND	ND	ND	ND	ND	ND	5,17 E-02	1,34 E+00	0,00 E+00	5,95 E-02	2,23 E+02
PENRE	MJ	2,71 E+04	7,52 E+02	ND	ND	ND	ND	ND	ND	ND	ND	1,02 E+01	1,13 E+02	0,00 E+00	7,82 E+00	-7,95 E+03
PENRM	MJ	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
PENRT	MJ	2,71 E+04	7,52 E+02	ND	ND	ND	ND	ND	ND	ND	ND	1,02 E+01	1,13 E+02	0,00 E+00	7,82 E+00	-7,95 E+03
SM	kg	1,74 E+02	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
RSF	MJ	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
NRSF	MJ	0,00 E+00	0,00 E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
FW	m^3	2,04 E+01	8,07 E-02	ND	ND	ND	ND	ND	ND	ND	ND	4,92 E-04	1,30 E-02	0,00 E+00	7,85 E-03	-3,97 E+00
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														

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results of 1 ton Electro-welded lattice girder															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1,49 E -01	1,72 E-03	ND	ND	ND	ND	ND	ND	ND	ND	2,61 E-05	2,71 E-04	0,00 E+00	1,10 E-05	-1,32 E-01
Non-hazardous waste disposed	kg	1,01 E+03	6,17 E+01	ND	ND	ND	ND	ND	ND	ND	ND	1,13 E-02	6,78 E+00	9,50 E+02	5,00 E+01	-1,07 E+02
Radioactive waste disposed	kg	6,67 E-02	4,84E-03	ND	ND	ND	ND	ND	ND	ND	ND	6,64 E-05	7,02 E-04	0,00 E+00	4,84 E-05	6,47 E-03

Output flow indicators

Results of 1 ton Electro-welded lattice girder																
Indicator	**Unit**	**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	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Material for recycling	kg	9,97E +00	0,00E +00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	9,50 E+02	0,00 E+00	0,00 E+00
Materials for energy recovery	kg	0,00E +00	0,00E +00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Exported energy, electricity	MJ	0,00E +00	0,00E +00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00
Exported energy, thermal	MJ	0,00E +00	0,00E +00	ND	ND	ND	ND	ND	ND	ND	ND	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00	0,00 E+00

Other environmental performance indicators

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	0,00E+00

Estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

Information related to Sector EPD

- This is an individual EPD

Differences versus previous versions

- This is the first version of the EPD.

References

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