MEGASA

## Environmental Product Declaration

EN ISO 14025:2010 / UNE-EN 15804:2012+A2:2020 / UNE 36904-2:2018

# Steel fabric


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GlobalEPD
A VERIFIED ENVIRONMENTAL DECLARATION

AENOR

# INDEX

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## UNE 36904-2:2018

The European standard EN 15804:2012+A2:2019 serves as the basis for the PCR.

Independent verification of the declaration and data, in accordance with EN ISO 14025:2010

☐ Internal ☑ External

Verification body:

AENOR

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# 1 GENERAL INFORMATION

## 1.1. The organisation

The MEGASA Group is a family business specialising in the production and distribution of long steel products. The group has more than a thousand employees, distributed throughout its various production plants and distribution units in the Iberian Peninsula and France.

With an installed capacity of more than three million tonnes, MEGASA produces a wide range of long steels through electric arc furnaces: ribbed round, wire rod, electrowelded fabric, and merchant and structural sections.

**Megamalla S.L.**

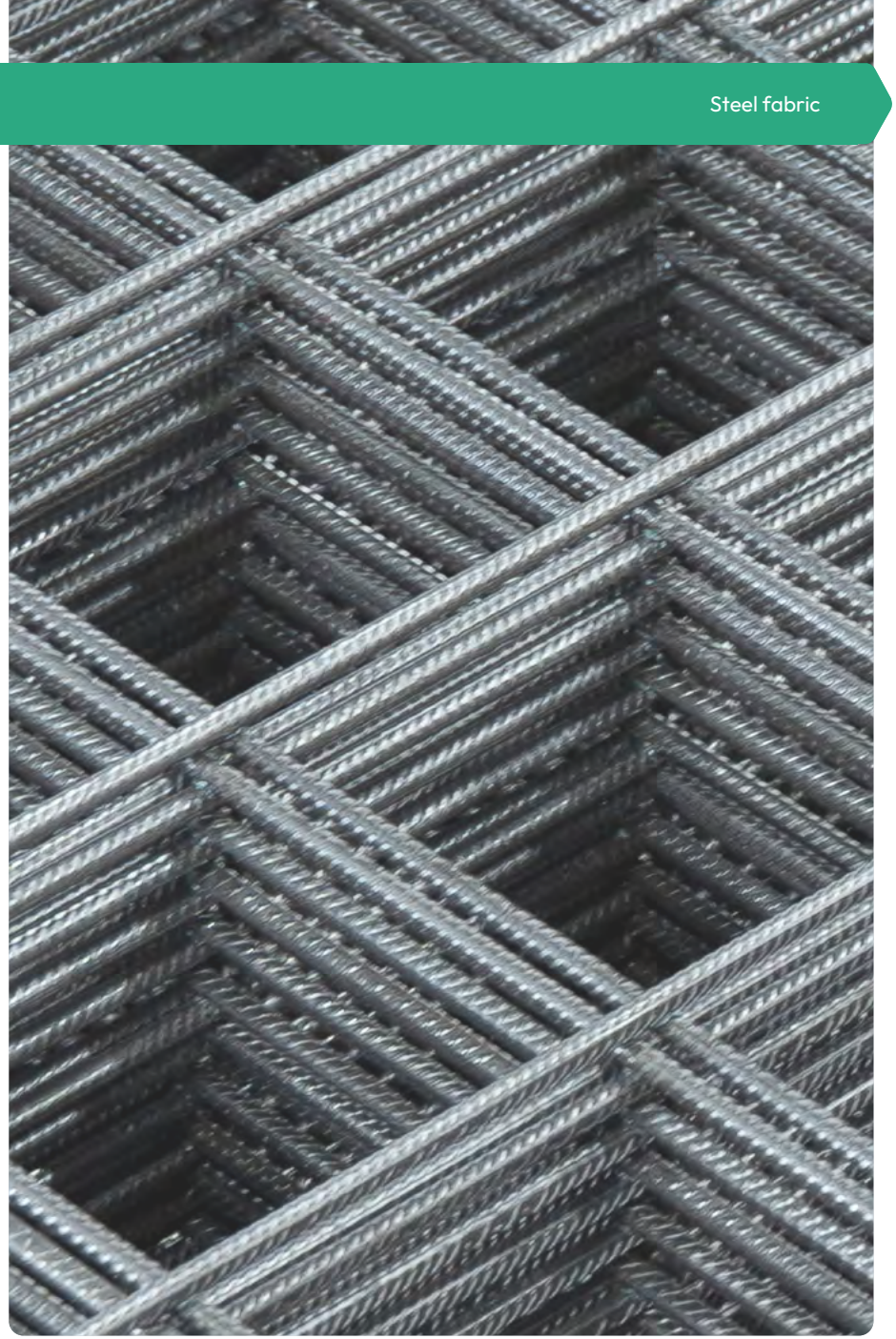
Megamalla consolidated its entry into the Megasa Group in the late 1990s. The company is located in the town of Narón (northwest Spain), close to the port of Ferrol.

Its main activity is the manufacture of standard and bespoke electrowelded steel fabric, and spacers (basic reinforcement in lattice girders). Its entire production comes from hot-rolled ribbed steel, in bars or coils.

**SN Transformados S.A.**

Based in Seixal, near Lisbon (southern Portugal), SN Transformados makes bespoke and standard fabrics, from cold-rolled wire and hot-rolled ribbed-wire coils.

Its production also includes cold-rolled ribbed-wire coils.



## 1.2. Scope of the declaration

This environmental product declaration (EPD) describes environmental information related to the cradle-to-door life cycle with options of fabric manufactured by GRUPO MEGASA at its plants in Narón (Spain) and Seixal (Portugal).

The function performed by the product system studied is the production of steel fabric for use as a structural element in the construction sector.

The EPD will be used for the relationship with the company's customers (B2B).

## 1.3. Life cycle and compliance

This EPD was prepared and verified in accordance with the following standards: UNE-EN ISO 14025:2010, UNE 36904-2:2018 and UNE-EN 15804:2012+A2:2020.

| Information relative to product category rules | |
|---|---|
| **Title** | Iron and steel industry. Environmental product declarations. Product category rules. Steel products for structures. Part 2: Transformed products and applicators of pre-tensioning system. |
| **Registration /version** | UNE 36904-2 |
| **Date of issue** | 2018 |
| **Administrator** | AENOR |

This environmental declaration includes the following life cycle stages:

| System limits. Information modules considered | | | |
|---|---|---|---|
| **Product stage** | A1 | Supply of raw materials | X |
| | A2 | Transport to factory | X |
| | A3 | Manufacturing | X |
| **Construction** | A4 | Transport to worksite | X |
| | A5 | Installation / construction | MNE |
| **Stage of use** | B1 | Use | MNE |
| | B2 | Maintenance | MNE |
| | B3 | Repair | MNE |
| | B4 | Replacement | MNE |
| | B5 | Rehabilitation | MNE |
| | B6 | In-service energy use | MNE |
| | B7 | In-service water use | MNE |
| **End of life** | C1 | Deconstruction / demolition | X |
| | C2 | Transport | X |
| | C3 | Waste treatment | X |
| | C4 | Elimination | X |
| | D | Potential for reuse, recovery and/or recycling | X |

**X** = Module included in the LCA; **NR** = Irrelevant module; **MNE** = Module not evaluated

This EPD may not be comparable with those prepared in other programmes or pursuant to different reference documents, in particular it may not be comparable with EPDs not prepared pursuant to UNE-EN 15804+A2.

Similarly, this EPD may not be comparable if the origin of the data is different (e.g. databases), if not all relevant information modules are included or if they are not based on the same scenarios.

Comparisons of construction products must be based on the same functions, applying the same functional units and at the level of the building (or architectural or engineering work), i.e. including the performance of products throughout their life cycles, as well as the specifications of section 6.7.2 of UNE-EN ISO 14025.

## 1.4. Differences compared to previous versions of this EPD

This revision is issued to correct an error in the module A4 transport scenario.

# 2 THE PRODUCT

## 2.1. Product identification

The MEGASA Group manufactures standard and bespoke electrowelded fabric. The production facilities in their factories allow them to manufacture their products in accordance with the specific requirements of each country. On customer's requests, we can study the production of wholly customised fabric.

The MEGASA Group manufactures electrowelded fabric with diverse levels of ductility, the high ductility fabric being specially designed for structures subjected to seismic stresses, providing greater security against fragile breaks.

Ribbed steel, together with concrete, constitutes reinforced concrete, which is one of the most widely used materials in the construction sector. This product is supplied in diameters ranging from 4mm to 25 mm and is presented in sheets of up to 14 m in length and 3.60 m in width.

In its manufacturing of electrowelded fabric, the MEGASA Group uses floating-type welding (welding independently, knot by knot).

**Bespoke electrowelded fabric**

These are fabrics in which the dimensions of the sheets, the overlap lengths and the combination of diameters used are adapted to the customers' needs so as not to duplicate the reinforcement. The use of this type of fabric is particularly suitable for the reinforcement of walls, screens and voussoirs. As it is a flat element with a large surface area, it enhances onsite performance..

**Long mesh fabric**

Long mesh fabrics are those in which reinforcement is placed only longitudinally. Transverse mounting bars are provided to ensure the operability of the sheet.

Long mesh fabrics allow easy placement, which makes them a highly advantageous alternative to conventional rebar. They also guarantee compliance with the amounts required in the project, as the bars are distributed precisely and at the established distances, and they improve the anchoring capacity of the main bars thanks to the added effect of the welded transverse bars.

The existence of a transverse bar connecting the main reinforcement reduces the possibilities of cracking due to radial tensile stresses, thus benefiting adhesion.

Depending on the required diameter, the width of the sheets varies from 1 m to 2 m, such that the weight of the sheet never exceeds 200 kg. As it is a flat element with a large surface area, it increases onsite performance.

**CPC Code:** 41261 – Bars and rods, cold-formed, cold-finished or otherwise worked, of iron or non-alloy steel.

## 2.2. Product composition

The product for which this study is written is electric arc furnace steel produced using 100% scrap.

The manufacturer declares that, during the life cycle of the steel rebar, no hazardous substances included in the candidate list of substances of very high concern (SVHC) for authorisation are used in a percentage exceeding 0.1% of product weight.

## 2.3. Product properties

The characteristics and properties of the fabric are defined in the regulations applicable to the product:

| Regulations -Fabric | |
|---|---|
| **UNE 36092** | Welded steel fabric for structural reinforcement in reinforced concrete reinforcement.<br><br>Electrowelded wire fabric made of B500T steel wires |
| **UNE 36060** | Welded steel fabric for structural reinforcement in reinforced concrete reinforcement.<br><br>Electrowelded fabric made of B500SD steel bars. |
| **UNE 36061** | Welded steel fabric for structural reinforcement in reinforced concrete reinforcement.<br><br>Electrowelded fabric made of B500S steel bars. |
| **EN 10080** | Steel for concrete reinforcement. Weldable reinforcing steel for reinforced concrete. General. |
| **BS 4483** | Steel fabric for concrete reinforcement |
| **DIN 488** | Concrete reinforcement. Electrowelded fabric |
| **SS 212540** | Product specification for SS-EN 10080:2005 – Steel for the reinforcement of concrete – Weldable reinforcing steel – Technical delivery conditions for bars, coils, welded fabric and lattice girders |

| Regulations -Fabric | |
|---|---|
| **SFS 1300** | Reinforcing steels. Minimum requirements for weldable reinforcing steel and welded fabric |
| **NS 3576** | Steel for the reinforcement of concrete. Dimensions and properties. Part 4: Welded fabric |
| **EN 1992-1-1** | Eurocode 2 |
| **NF A 35-080-1** | Steels for reinforced concrete. Weldable steels – Part 1: Bars and coils |
| **DS/INF 165** | National Annex to Eurocode 2: Design of concrete structures – Part 1-1: General rules and rules for buildings |
| **E458** | Electrowelded fabric for the reinforcement of concrete. Characteristics, tests and marking |
| **E479** | Small-diameter electrowelded fabric. Characteristics, tests and marking |

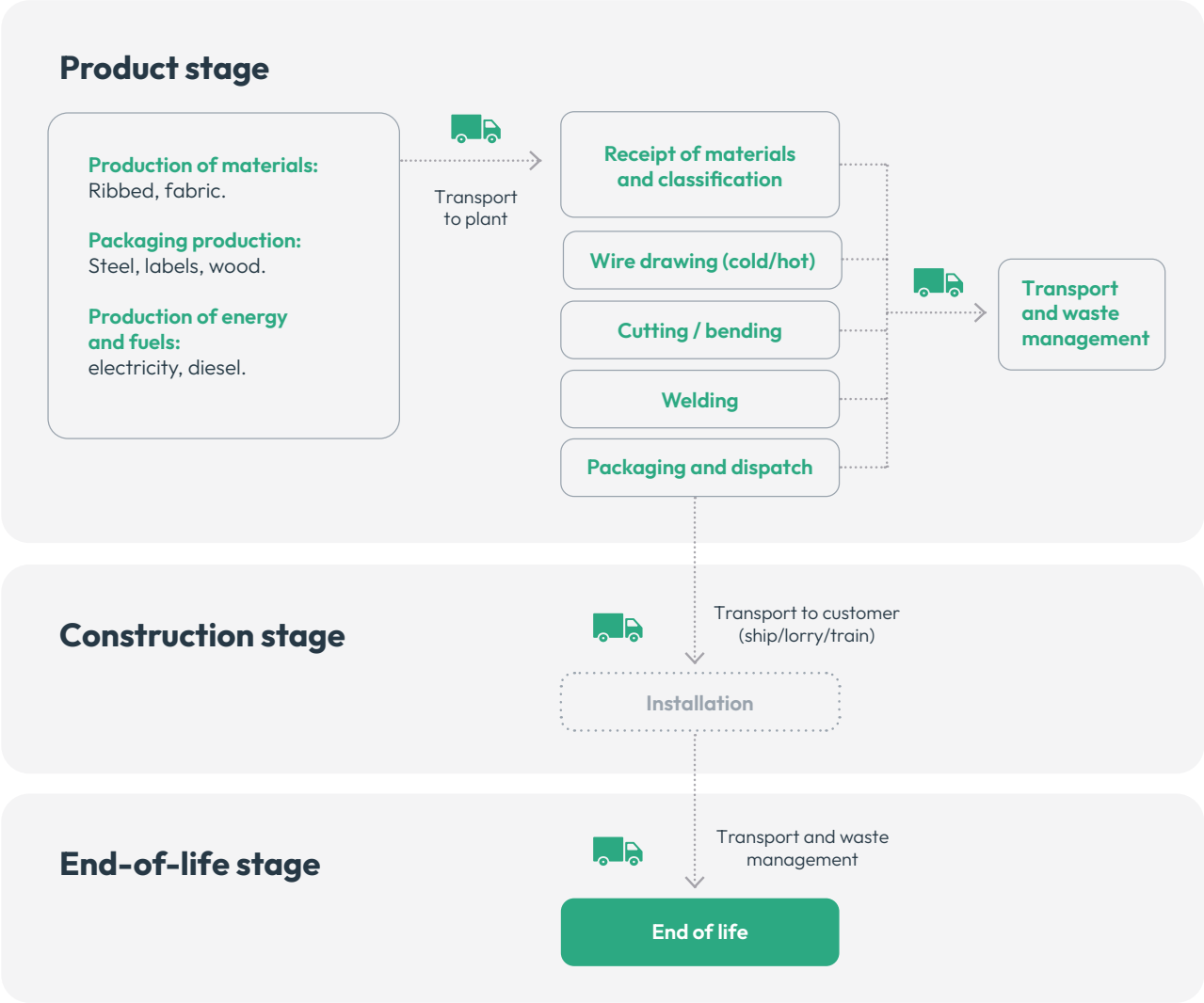
# 3 INFORMATION ON LCA

## 3.1. Life cycle assessment

The Life cycle assessment report for the EPD of the MEGA-SA Group's steel fabric was prepared by the company Abaleo S.L. using the Ecoinvent 3.9.1 database and the SimaPro 9.5.0.0.0 software, which is the most updated version available at the time the LCA was prepared. The study was performed using data from the Narón (Spain) and Seixal (Portugal) plants using averaged values.

Electrowelded wire fabric consists of hot or cold-rolled corrugated steel bars that are arranged longitudinally and transversally in an orthogonal manner, and are welded at all their intersections to form rectangular sheets. In the fabric production lines, the two groups of elements, transverse and longitudinal bars, which make up the sheet, are joined together by means of electro-welding process. The fabric production lines are automated and are equipped with advanced software which, by entering specific parameters, automatically adjusts the machine settings, allowing the production of diverse types of electrowelded fabric.

The LCA study follows the recommendations and requirements of the following international standards: ISO 14040:2006, ISO 14044:2006, UNE 36904-2:2018 and UNE-EN 15804:2012+A2:2020.



## 3.2. Declared unit

The declared unit is one tonne (1,000 kg) of product, including packaging.

## 3.3. Reference service life (RSL)

The reference service life (RSL) of the product under study is not specified as the stage of use is not included in the EPD.

## 3.4. Allocation criteria

In accordance with the criteria of the reference standard, the allocation of the inputs and outputs of the system was applied on a mass basis. This allocation criterion was applied for the general consumption of each MEGASA Group plant (consumption of raw materials and energy), transport, emissions and discharges, and waste.

## 3.5. Representativeness, quality and selection of data

To model the steel fabric manufacturing process, 2022 production data were used, as data from the said year are considered representative. From the Narón (Spain) and Seixal (Portugal) plants, data were obtained concerning material and energy consumption, transport and waste generation.

Where necessary, the Ecoinvent 3.9.1 database (January 2023) was used. The database is the latest version available at the time of the LCA. For the inventory data, for modelling of the LCA and for calculation of the environmental impact categories required by the reference standard, SimaPro 9.5.0.0 software was used, which is the most up-to-date version available at the time of the study.

The following criteria were used to select the most representative processes:

- The data should be representative of the technological development actually applied in the manufacturing processes. If no information was available, data representing an average technology were chosen.
- Geographic data should be as close as possible and, where appropriate, regionalised averages.
- Data should be as up to date as possible.

In order to assess the quality of the primary data on the production of the product studied, the semi-quantitative evaluation criteria for data quality proposed by the European Union in its Guide to the Environmental Footprint of Products and Organisations were applied. The results obtained are as follows:

- Very good integrity. Score 1.
- Good methodological appropriateness and coherence. Score 2
- Very good temporal representativeness. Score 1.
- Good technological representativeness. Score 2.
- Very good geographical representativeness. Score 1.
- Low data uncertainty. Score 2.

Based on the above data, the data quality rating (DQR) takes the following value: 9/6= 1.5, indicating excellent data quality.

For a better understanding of the data quality assessment carried out, it is indicated that the score for each of the criteria varies from 1 to 5 (the lower the score, the higher the quality) and that the following table is applied to obtain the final score:

| Overall data quality rating (DQR) | Overall level of data quality |
|---|---|
| ≤ 1,6 | Excellent quality |
| 1,6 a 2,0 | Very good quality |
| 2,0 a 3,0 | Good quality |
| 3 a 4,0 | Reasonable quality |
| > 4 | Insufficient quality |

# 4 SYSTEM LIMITS, SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

The product system studied in the life cycle assessment of the steel fabric is from cradle to gate with options (modules A1-A3, A4, C and D). The following stages of production were studied:

## Module A1: raw materials production

This module includes the production process of raw materials, which considers:

- Resource extraction and production of raw materials.
- Transport of raw materials to processing/production centres.
- Energy and fuel consumption during the production of raw materials.
- Consumption of other resources (e.g. water) during the production of raw materials.
- The generation of waste and emissions to air and discharges to water and soil during the production of raw materials.
- The production of electricity used in the manufacturing process

## Module A2: transport

Transport by lorry, ship and train of all the raw materials from the production sites (suppliers) to the MEGASA GROUP plants in Spain (Narón) and Portugal (Seixal) was considered. The transport distances of the raw materials were provided by those responsible for the plant, knowing the location of the plant and the facilities of its suppliers.

## Module A3: manufacturing

At this stage, we considered the consumption of auxiliary materials for production (auxiliary materials and general plant consumption); the production of the packaging necessary for the distribution of the product to the customer and its transport to the plant; emissions into the air and water, and transport to the waste manager of the waste generated during this stage of the life cycle.

Plant managers provided transport distances of the waste, knowing the location of their waste managers' facilities.

## Module A4: transport to place of use

Using 2022 data, transport of the finished product from the plants where the fabric is produced to the customer was considered, distinguishing the means of transport used: lorry, train or ship.

| Parameter | | Quantity (per declared unit) |
|---|---|---|
| **Litres of diesel** | EURO 6 track (MMA. 15,79 t) | 0,0436 l/tkm |
| | Ship | 0,0026 l/tkm |
| | Train | 0,0127 l/tkm |
| **Average distance** | EURO 6 lorry | 370,50 km |
| | Ship | 1.814,66 km |
| | Train | 17,37 km |
| **Cargo load factor (including empty return)** | | 50%* |
| **Bulk density of transported products** | | The variability of product formats does not allow the identification of a single bulk density. |
| **Useful capacity factor** | | The variability of product formats does not allow the identification of a single bulk density. |

** Percentage obtained from the Ecoinvent database*

## Module C1: deconstruction / demolition

In the LCA it was assumed that 100% of the fabric product had been used as concrete reinforcement, i.e. integrated into other structures. In order to represent the demolition process, a generic process from the Ecoinvent 3.9.1 database was used.

## Module C2: transport to the waste treatment/ recovery site

It was considered that the product under study had been transported to the point of waste management by road at the end of its useful life.

Transport was calculated on the basis of the default values of the distances set out in the draft "prEN 17662 Product category rules, supplementing EN 15804 for structural steel, iron and aluminium products for construction".

## Module C3: waste treatment, and Module C4: waste disposal

Recovery rates for reuse, recycling and landfill were calculated using the default data provided in Annex I of "prEN 17662 Product category rules, supplementing EN 15804 for structural steel, iron and aluminium products for construction" for rebar.

| Parameter | Quantity (expressed per functional unit) | |
|---|---|---|
| **Collection process, specified by type** | 0 kg collected separately.<br>1000 kg collected with mixed construction waste. | |
| **Recovery system, specified by type** | 0 kg for reuse.<br>900 kg of steel for recycling. | |
| **Elimination, specified by type** | 100 kg of steel for final disposal. | |
| **Scenario development assumptions (transport)** | Average distance EURO 5* lorry | For recycling: 100 km |
| | | For landfill: 200 km. |

## Module D: benefits and burdens beyond system limit

Module D shows the potential benefits and burdens related to the secondary material recovered when leaving the product system. Because the raw material used to manufacture the product is 100% secondary material, the benefits and burdens beyond system limits are zero.

Waste undergoing recovery or recycling during the product stage is not included in the system limits of this module as it accounts for less than 1% of the declared unit.

## Life cycle information – UNE EN 15804

| A1 a A3 | | | A4 a A5 | | B1 a B7 | | | | | | | C1 a C4 | | | | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Benefits and burdens beyond system |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| X | X | X | X | MNE | MNE | MNE | MNE | MNE | MNE | MNE | MNE | X | X | X | X | X |
| Supply of raw materials | Transport | Manufacturing | Transport | Construction / installation process | Use | Maintenance | Repair | Replacement | Rehabilitation | In-service energy use | In-service water use | Deconstruction, demolition | Transport | Waste treatment | Waste disposal | Potential for reuse, recovery and recycling |
| | | | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | Sce-nario | |

**X:** Evaluated module. / **MNE:** Module not evaluated.

# 5 DECLARATION OF LCA AND LCI ENVIRONMENTAL PARAMETERS

## Environmental impact

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins or risks.

| Steel fabric. Declared unit: 1 ton | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5** | C1 | C2 | C3 | C4 | D |
| GWP-GHG* | kg CO2 eq | 3,64E+02 | 5,42E-01 | 1,94E+00 | 3,66E+02 | 4,60E+01 | ND | 5,85E+01 | 7,60E+00 | 4,74E+00 | 2,59E-01 | 0,00E+00 |
| GWP-total | kg CO2 eq | 3,64E+02 | 5,42E-01 | -4,65E+00 | 3,59E+02 | 4,60E+01 | 6,59E+00 | 5,85E+01 | 7,60E+00 | 4,74E+00 | 2,59E-01 | 0,00E+00 |
| GWP-fossil | kg CO2 eq | 3,58E+02 | 5,42E-01 | 1,92E+00 | 3,61E+02 | 4,60E+01 | ND | 5,84E+01 | 7,60E+00 | 4,71E+00 | 2,59E-01 | 0,00E+00 |
| GWP-bio-genic | kg CO2 eq | 4,38E+00 | 3,26E-05 | -6,58E+00 | -2,21E+00 | 2,81E-03 | 6,59E+00 | 3,84E-03 | 3,64E-04 | 1,86E-02 | 7,03E-05 | 0,00E+00 |
| GWP-luluc | kg CO2 eq | 9,40E-01 | 1,06E-05 | 1,67E-02 | 9,57E-01 | 1,03E-03 | ND | 2,39E-03 | 8,18E-05 | 8,10E-03 | 1,64E-05 | 0,00E+00 |
| ODP | kg CFC11 eq | 1,26E-05 | 1,17E-08 | 7,30E-08 | 1,27E-05 | 9,30E-07 | ND | 9,22E-07 | 1,55E-06 | 7,62E-08 | 4,12E-09 | 0,00E+00 |
| AP | mol H+ eq | 1,05E+00 | 6,91E-04 | 7,13E-03 | 1,05E+00 | 3,47E-01 | ND | 5,60E-01 | 1,45E-02 | 3,00E-02 | 2,43E-03 | 0,00E+00 |
| EP-freshwa-ter | kg P eq | 5,15E-03 | 4,26E-07 | 2,48E-04 | 5,40E-03 | 3,55E-05 | ND | 5,00E-05 | 4,51E-06 | 3,19E-04 | 3,08E-07 | 0,00E+00 |
| EP-marine | kg N eq | 2,53E-01 | 1,74E-04 | 2,11E-03 | 2,55E-01 | 8,74E-02 | ND | 2,63E-01 | 2,54E-03 | 8,88E-03 | 1,14E-03 | 0,00E+00 |
| EP-terrestrial | mol N eq | 2,41E+00 | 1,70E-03 | 2,24E-02 | 2,44E+00 | 9,52E-01 | ND | 2,86E+00 | 2,75E-02 | 9,78E-02 | 1,24E-02 | 0,00E+00 |
| POCP | Kg NMVOC eq | 1,20E+00 | 1,29E-03 | 1,26E-02 | 1,22E+00 | 3,09E-01 | ND | 8,41E-01 | 1,18E-02 | 2,94E-02 | 3,66E-03 | 0,00E+00 |
| ADP-mine-rals& metals [2] | kg Sb eq | 6,33E-05 | 1,88E-08 | 7,67E-06 | 7,10E-05 | 1,36E-06 | ND | 2,46E-06 | 3,40E-07 | 3,55E-07 | 1,08E-08 | 0,00E+00 |
| ADP-fossil [2] | MJ | 5,26E+03 | 7,17E+00 | 2,10E+01 | 5,29E+03 | 5,99E+02 | ND | 7,67E+02 | 1,11E+02 | 5,68E+01 | 3,40E+00 | 0,00E+00 |
| WDP [2] | m³ | 1,98E+02 | 6,55E-03 | 6,82E+00 | 2,05E+02 | 5,41E-01 | ND | 9,85E-01 | 1,12E-02 | 7,80E-01 | 4,38E-03 | 0,00E+00 |

* The category includes all greenhouse gases included in GWP-total, but excludes absorptions and emissions of biogenic carbon dioxide and biogenic carbon stored in the product.

** Adjustment of biogenic CO2 emission - management of product packaging waste.

- **GWP-GHG.** Global warming potential excluding biogenic carbon.
- **GWP-total.** Global warming potential.
- **GWP-fossil.** Global warming potential of fossil fuels.
- **GWP-biogenic.** Biogenic global warming potential.
- **GWP-luluc.** Global warming potential of use of and change in use of land.
- **ODP.** Stratospheric ozone depletion potential.
- **AP.** Acidification potential, cumulative surplus.
- **EP-freshwater.** Eutrophication potential, fraction of nutrients reaching the final freshwater compartment.
- **EP-marine.** Eutrophication potential, fraction of nutrients reaching the final marine water compartment.
- **EP-terrestrial.** Eutrophication potential, cumulative surplus.
- **POFP.** Photochemical oxidant formation potential.
- **ADP-minerals&metals.** Depletion of abiotic resources - minerals and metals.
- **APD-fossil.** Potential abiotic resource depletion for fossil resources.
- **WDP.** Water deprivation potential (user), weighted water deprivation consumption.

## Additional environmental impacts

| Steel fabric. Declared unit: 1 ton | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Unit | A1 | A2 | A3 | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
| PM | Incidence of diseases | 2,10E-05 | 3,29E-08 | 2,40E-07 | 2,13E-05 | 2,44E-06 | 1,58E-05 | 7,12E-07 | 4,44E-07 | 6,99E-08 | 0,00E+00 |
| IRP [1] | kBq U235 eq | 3,42E+01 | 1,15E-03 | 8,60E-02 | 3,43E+01 | 9,00E-02 | 9,05E-02 | 3,95E-01 | 6,81E-01 | 5,82E-04 | 0,00E+00 |
| ETP-fw [2] | CTUe | 9,23E+02 | 3,20E+00 | 2,26E+01 | 9,49E+02 | 2,72E+02 | 3,68E+02 | 3,63E+01 | 1,66E+01 | 1,63E+00 | 0,00E+00 |
| HTP-c [2] | CTUh | 1,88E-06 | 3,45E-11 | 2,37E-08 | 1,90E-06 | 3,72E-09 | 3,28E-09 | 6,19E-10 | 5,92E-10 | 1,52E-11 | 0,00E+00 |
| HTP-nc [2] | CTUh | 4,49E-06 | 3,85E-09 | 1,98E-08 | 4,52E-06 | 2,81E-07 | 8,20E-08 | 7,70E-08 | 2,34E-08 | 4,01E-10 | 0,00E+00 |
| SQP [2] | - | 1,88E+03 | 1,37E-02 | 7,16E+02 | 2,60E+03 | 1,08E+00 | 1,45E+00 | 2,17E-01 | 9,41E+00 | 4,23E+00 | 0,00E+00 |

- **PM.** Potential for disease incidence due to emissions of particulate matter.
- **IRP.** Exposure efficiency of the human potential relative to U235.
- **ETP-fw.** Comparative potential of toxic unit for ecosystems-freshwater.
- **HTP-c.** Comparative ecosystem toxic unit potential - carcinogenic effects.
- **HTP-nc.** Comparative ecosystem toxic unit potential - non-carcinogenic effects.
- **SQP.** Soil quality potential index.

### Note 1

This impact category deals with the potential impact of low doses of ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents or occupational exposure due to disposal of radioactive waste in underground facilities. The potential for ionising radiation from soil due to radon or certain building materials is not measured in this parameter.

### Note 2

The results of this environmental impact indicator should be used with caution as the uncertainties of the results are high and experience with this parameter is limited.

## Use of resources

| Steel fabric. Declared unit: 1 ton | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Unit | A1 | A2 | A3 | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
| PERE | MJ | 8,85E+02 | 1,90E-02 | 1,44E+02 | 1,03E+03 | 1,47E+00 | 1,50E+00 | 1,83E-01 | 1,40E+01 | 9,23E-02 | 0,00E+00 |
| PERM | MJ | 0,00E+00 | 0,00E+00 | 1,00E+02 | 1,00E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | MJ | 8,85E+02 | 1,90E-02 | 2,45E+02 | 1,13E+03 | 1,47E+00 | 1,50E+00 | 1,83E-01 | 1,40E+01 | 9,23E-02 | 0,00E+00 |
| PENRE | MJ | 6,66E+03 | 7,21E+00 | 2,57E+01 | 6,69E+03 | 6,02E+02 | 7,69E+02 | 1,11E+02 | 9,44E+01 | 3,41E+00 | 0,00E+00 |
| PENRM | MJ | 4,67E-01 | 0,00E+00 | 3,42E-04 | 4,67E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PENRT | MJ | 6,66E+03 | 7,21E+00 | 2,57E+01 | 6,69E+03 | 6,02E+02 | 7,69E+02 | 1,11E+02 | 9,44E+01 | 3,41E+00 | 0,00E+00 |
| SM | kg | 1,01E+03 | 0,00E+00 | 0,00E+00 | 1,01E+03 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | m3 | 4,47E+00 | 3,03E-04 | 1,04E-01 | 4,58E+00 | 2,48E-02 | 3,85E-02 | 1,16E-03 | 5,81E-02 | 1,95E-04 | 0,00E+00 |

- **PERE.** Use of renewable primary energy excluding renewable primary energy resources used as raw material.
- **PERM.** Use of renewable primary energy used as raw material.
- **PERT.** Total use of renewable primary energy.
- **PENRE.** Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw material.
- **PENRM.** Use of non-renewable primary energy used as raw material.
- **PENRT.** Total use of non-renewable primary energy.
- **SM.** Use of secondary materials.
- **RSF.** Use of renewable secondary fuels.
- **NRSF.** Use of non-renewable secondary fuels.
- **FW.** Net use of flowing water resources.

## Waste categories

Parameters describing waste generation.

| Steel fabric. Declared unit: 1 ton | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Unit | A1 | A2 | A3 | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
| HWD | kg | 2,18E-02 | 4,76E-05 | 1,56E-04 | 2,20E-02 | 3,75E-03 | 5,14E-03 | 3,75E-04 | 2,18E-04 | 2,27E-05 | 0,00E+00 |
| NHWD | kg | 3,16E+01 | 3,56E-04 | 5,08E-01 | 3,21E+01 | 3,09E-02 | 5,71E-02 | 6,05E-03 | 9,02E-02 | 9,99E+01 | 0,00E+00 |
| RWD | kg | 1,99E-02 | 6,18E-07 | 6,78E-05 | 2,00E-02 | 4,65E-05 | 3,75E-05 | 6,47E-04 | 5,48E-04 | 2,64E-07 | 0,00E+00 |

- **HWD.** Hazardous waste disposed
- **NHWD.** Non-hazardous waste disposed.
- **HWD.** Hazardous waste disposedf.

## Outflows

Parameters describing outflows.

| Steel fabric. Declared unit: 1 ton | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Unit | A1 | A2 | A3 | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
| CRU | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR | kg | 0,00E+00 | 0,00E+00 | 1,24E-01 | 1,24E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,00E+02 | 0,00E+00 | 0,00E+00 |
| MER | kg | 0,00E+00 | 0,00E+00 | 1,55E-01 | 1,55E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EE | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

- **CRU.** Components for re-use.
- **MFR.** Materials for recycling.
- **MER.** Materials for energy rating.
- **EE.** Exported energy.

## Information on biogenic carbon content

| Biogenic carbon content | Kg/unit. Product | K/unit. Packaging |
|---|---|---|
| Steel fabric | 0 | 1,80 |

# 6 ADDITIONAL ENVIRONMENTAL INFORMATION

## 6.1. Other indicators

The production of electrowelded steel fabric does not generate by-products.

## 6.2. Indoor air emissions

The manufacturer declares that the MEGASA Group's electrowelded steel fabric does not generate indoor air emissions during its lifetime.

## 6.3. Emissions to soil and water

The manufacturer declares that MEGASA Group's electrowelded steel fabric does not generate emissions to soil or water during its lifetime.

# 7 REFERENCES


- General rules of the GlobalEPD programme, 2nd revision. AENOR. February 2016
- prEN 17662 Product category rules, supplementing EN 15804 for structural steel, iron and aluminium products for construction.
- UNE 36904-2:2018 Standard. Iron and steel industry. Environmental product declarations. Product category rules. Structural steel products - Part 2:processed products and prestressing system applicators.
- UNE-EN 15804:2012 Standard +A2:2020: sustainability in construction. Environmental product declarations. Basic product category rules for construction products.
- UNE-EN ISO 14025:2010 Environmental labels. Type III environmental declarations. Principles and procedures (ISO 14025:2006).
- UNE-EN ISO 14040:2006 Standard/A1:2021. Environmental management. Life cycle assessment. Principles and reference framework. Amendment 1. (ISO 14040:2006/Amd 1:2020).
- UNE-EN ISO 14044:2006 Standard/A1:2021. Environmental management. Evaluation of life cycle. Requirements and guidelines - Amendment 2. (ISO 14044:2006/Amd 2:2020).
- Life cycle assessment report for environmental product declaration of MEGASA Group's steel fabric. Drafted by Abaleo S.L., April 2024. Version 2.
- Databases and methodologies of environmental impact assessment applied using SimaPro 9.5.0.0.


MEGASA

# Environmental Product Declaration

GlobalEPD
A VERIFIED ENVIRONMENTAL DECLARATION

AENOR