



ENVIRONMENTAL PRODUCT DECLARATION

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

MAGREEN SANDWICH PANEL

MAGHREB STEEL 

 **EPD**®
MENA
THE INTERNATIONAL EPD® SYSTEM

Program:
Program operator:
EPD registration number:
Added date:
Valid until:

The International EPD® System, www.environdec.com
EPD International AB
EPD-IES-0021830
2025-05-05
2030-05-04



General information

Program information

| | |
|-------------------------|--|
| Program: | The International EPD® System EPD International AB |
| Program Operator | Box 210 60 SE-100 31 Stockholm Sweden |
| Website: | www.environdec.com |
| E-mail: | info@environdec.com |

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, version 1.3.4 Published on 2024.04.30. Based on CEN standard EN 15804. CEN standard EN 15804 serves as the core PCR. UN CPC code 412.*

PCR review was conducted by: The Technical Committee of the International EPD®System. See <https://www.environdec.com/about-us/the-international-epd-system-about-the-system> for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Life Cycle Assessment (LCA)

LCA accountability: Dr. Rajesh Kumar Singh; Sphera Solutions

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: Dr. Nasser Ayoub,
Helwan University
Email: nassermayoub@gmail.com

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes No

[Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both ways, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

EPD owner

MAGHREB STEEL

Contact: Hanane ELGUINOUI; *Sustainability & Safety Director*. Email: Hanan@maghrebsteel.ma

MAGHREB STEEL has sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programs, 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/functional 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 characterization 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

Description of the organization:

Founded in Morocco in 1975, Maghreb Steel has continued to develop and expand, diversifying its activities and progressively increasing its production capacity.

Maghreb Steel, a leading steel producer in Morocco, specializes in the production of flat steel products. Their manufacturing process involves several key stages, including the melting of recycled scrap metal in electric arc furnaces, followed by casting, rolling, and finishing. This process ensures high-quality green steel with precise specifications.

With over 1700 employees, and over 1 million tons of capacity, Maghreb Steel is committed to contributing to the durability and the green transformation of the steel industry by providing high-quality green steel that meet international standards.

Maghreb Steel's product portfolio covers Steel Slabs, Hot-Rolled Steel, Cold-Rolled Steel, Hot-Dip Galvanized Steel, Coated Steel, Sandwich panel and welded tubes & profiles, providing to various industries such as construction, automotive, and appliances.

Product-related or management system-related certifications:

MAGHREB STEEL's environmental management is based on the international environmental management systems standard. All Maghreb Steel plants have third-party certification: ISO 9001, ISO 16949, ISO 14001, ISO 45001, ISO 50001, and the CSR label.

Name and location of production sites:

Maghreb Steel Site Bled Solb

Secondary Road 3002, Industrial Zone BLED SOLB, Commune Chellalat
Mohammedia – Maroc

Maghreb Steel Site Tit Mellil

Maghreb Steel Site Tit Mellil, National Route 9, km 10, Ahl Loughlam
BP : 3553 Casablanca - Maroc



Product information

Product name: MAGREEN Sandwich Panel.

Product identification:

The MAGREEN Sandwich Panel is an advanced, high-performance construction material manufactured by Maghreb Steel. It is composed of steel produced using up to 100% recycled scrap and 100% renewable energy in an electric arc furnace (EAF), making it an environmentally sustainable choice.

UN CPC code: 412.

Geographical scope: Global.

Product description:

This Environmental Product Declaration refers to MAGREEN sandwich panel, which is made from steel produced by up to 100% recycled scrap and up to 100% renewable energy in an electric arc furnace (EAF). Additional alloying elements are added according to the steel grade to achieve the required steel characteristics. The alloying strategy is well-targeted to meet specific requirements per application (construction, pressure, large tubes, etc.) and environment (corrosive, under pressure, temperature variation, etc.) according to applicable standards. Information on the various sandwich panel ranges is available on www.maghrebsteel.ma.

MAGREEN sandwich panels are monobloc components made up of two galvanized and pre-painted steel sheet facings and an insulating core of hard polyurethane foam. Equipped with very strong insulation and sealing power against the infiltration of humidity, the composite panels have high load-bearing capacity and great rigidity, allowing them to withstand mechanical stress. MAGREEN sandwich panel production line is a latest-generation line that guarantees high dimensional precision and consistent product quality.

The ranges of sandwich panels meet the specific needs of each usage:

- Dalakit sandwich panel: Roof panel, with a sheet thickness of 0.3 mm and a foam thickness of 30 mm.
- IsoMur sandwich panel: Panel for cladding and separation, with a sheet thickness of 0.5 to 0.3 mm and a foam thickness of 30 to 200 mm.
- IsoToit sandwich panel: Sandwich panel for metal roofing, with a sheet thickness of 0.3 to 0.5 mm and a foam thickness of 30 to 200 mm.
- IsoFrigo sandwich panel: Insulated sandwich panel for cold storage, with a sheet thickness of 0.5 mm and a foam thickness of 100 mm.

MAGREEN sandwich panels comply with EN 14509.

Applications:

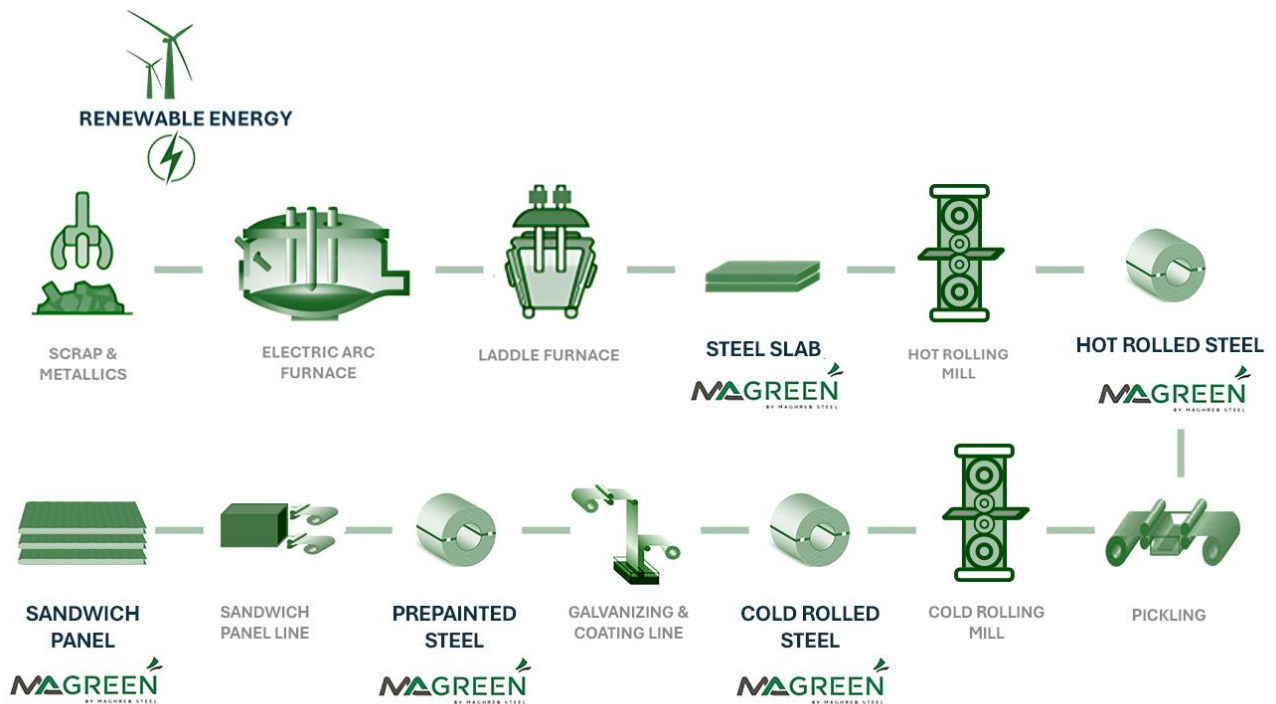
MAGREEN sandwich panels are suitable for use in several areas: industry (factories, warehouses, cold rooms, etc.), agriculture (storage sheds, livestock sheds, etc.), housing (verandas, living bases, etc.).

Manufacturing process:

MAGREEN sandwich panels are produced by Maghreb Steel in Morocco using the Electric Arc Furnace. The primary input for steelmaking is scrap metal, and the facility is powered by up to 100% renewable electricity.

The Electric Arc Furnace outputs steel slabs, which then undergo a hot rolling. The hot rolled coils are then pickled and cold rolled to produce cold rolled coils. The cold rolled coils are subsequently dipped in a bath of molten zinc and then paint-coated to produce galvanized steel and prepainted steel.

MAGREEN sandwich panels are manufactured on a sandwich panel line using two galvanized and pre-painted steel sheet facings and an insulating core of rigid polyurethane foam.



LCA information

Functional unit / declared unit: 1 m² of MAGREEN Sandwich Panel with a self-weight of 6.81 kg/m² defined as a standard product.

Reference service life: The reference service life for MAGREEN Sandwich Panel is not declared. It is used in construction with many different application purposes. The lifetime therefore will be limited by the application and corresponding service.

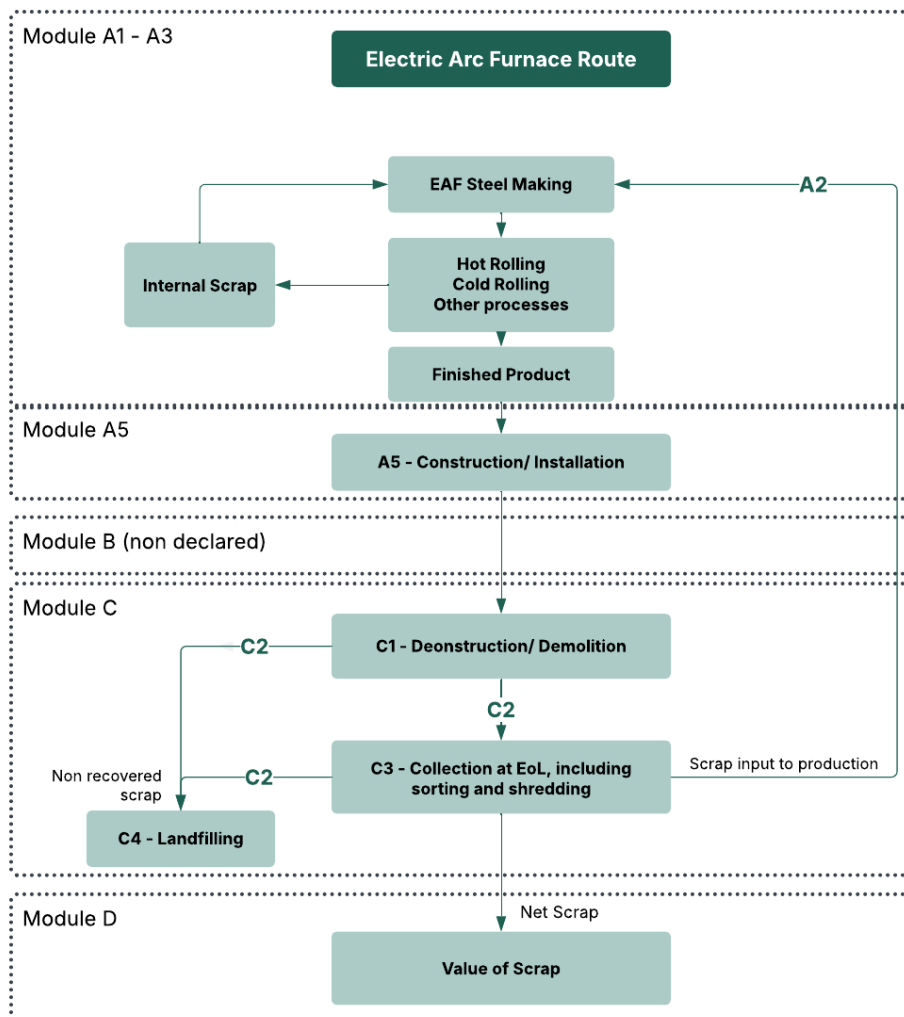
Time representativeness: The collection of foreground data refers to January 2024 to December 2024.

Database and LCA software used: The background data has been taken from the latest available Sphera Managed LCA Content (MLC) 2024.2 and the LCA model was created using Sphera's LCA for Experts (LCA FE) software, version 10.8.

Description of system boundaries: The system boundary: It includes cradle to gate stage with additional modules A5, C1-C4, and module D.

Reference package used: EN 15804 reference package based on EF 3.1.

System diagram:



- **Module A1 to A3:**

The product stage includes 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. Impacts on raw material transportation, including external scrap, and intermediate products are included. The transport distances and routes are calculated based on the manufacturer data. These modules consider the production of MAGREEN Sandwich panels at Maghreb Steel, in Morocco, using EAF route steel production. Maghreb Steel MAGREEN Sandwich panels are packed with stretch film, tape, and EPS Blocks.

For the modelling (module A3), the electricity supply was based on Morocco country grid mix and Morocco specific renewable energy: wind energy from Sphera Managed LCA Content (MLC) 2024.2. The emission factor for the electricity mix GWP-GHG indicator is 76.10 g CO₂eq./kWh.

- **Module A5:**

The module A5 includes the treatment of packaging materials.

- **Module C1 to C4:**

Within this EPD, the modules C1-C4 are included. These modules consider the dismantling of the considered product (C1), the transportation of the dismantled components to their End of Life (EoL) destination (C2), the waste processing for recovery or recycling (C3) as well as the disposal (C4), if given.

For the module C2, transportation of the dismantled components is considered by truck over a distance of 100km.

Based on common practices, steel and foam are separated and the following end of life scenario is considered for the steel part of the sandwich panels:

- 89% is recycled
- 10% is reused
- 1% is sent to landfill

100% of the foam is incinerated with energy recovery.

At EoL, the steel material leaves the product system in C3 for recycling and reuse in Module D as well as disposal in module C4.

Environmental burdens of the incineration of the polyurethane foam are assigned to module C3; resulting potential benefits and loads for thermal and electrical energy are declared in module D.

| Category | Subcategory | Unit | Quantity |
|---------------------------|---|------|----------|
| Collection process | Collected separately | kg | 6.81 |
| | Collected with mixed construction waste | kg | 0 |
| Recovery | Reuse | kg | 0.52 |
| | Recycling | kg | 4.59 |
| | Landfill | kg | 0.05 |
| | Incineration | kg | 0 |
| | Incineration with energy recovery | kg | 1.65 |
| | Energy conversion efficiency rate | kg | 0 |
| Disposal | Material for final disposal | kg | 0 |
| Transport | Deconstruction site to scrap processing plant | km | 0 |
| | Scrap processing plant to site for end of waste | km | 100 |

- **Module D:**

Module D encompasses the declared benefits and loads arising from the net flow of secondary fuels or materials within the product system. It excludes flows allocated as co-products. Metals are considered to reach the end-of-waste state after undergoing sorting and shredding processes. The treatment, along with the net benefits and loads of reuse or recycling potentials (specifically for the net scrap amount), is included in Module D.

Potential environmental benefits are given for the net steel scrap that is produced at the end of a final product's life, calculated as follows:

Net scrap = Amount of steel recycled at end-of-life – Scrap input from previous product life cycles.

In the manufacturing of MAGREEN Sandwich Panel, 4.18 kg of external scrap was used. At the end-of-life, 4.59 kg of scrap are recovered for recycling and 0.52 kg for reuse. This means that the system has a net output of scrap, which is shown in module D as an environmental credit or burden depending on the impact category.

Maghreb Steel does not have direct control over a particular process in the module B-D.

Data quality assessment and declaration:

| Process | Source type | Source | Reference year | Data category | Share of primary data, of GWP-GHG results for A1- A3 |
|--|-----------------------------|---------------------------------|----------------|---------------|--|
| Manufacturing of product | Collected data | EPD owner | 2024 | Primary data | 18.96% |
| Generation of electricity used in manufacturing of product | Database and collected data | Sphera MLC 2024.2 and EPD owner | 2024 | Primary data | 4.88% |
| Transport of raw materials to the manufacturing site | Database | Sphera MLC 2024.2 | 2024 | Primary data | 1.53% |
| Total share of primary data, of GWP-GHG results for A1-A3 | | | | | 25.37% |

Note: The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that does not capture all relevant aspects of data quality. The indicator is not comparable across product categories.



Cut-off criteria:

The environmental impact of the studied product has been evaluated by considering all significant processes, materials, and emissions. Flows that were excluded are assumed to have a negligible impact, contributing less than 5% to the cumulative impact assessment categories. The production of capital equipment, facilities, and infrastructure required for manufacturing has not been included.

This study has assessed both transit and product packaging wherever possible. For raw materials, packaging could not be considered. However, it is reasonable to assume that most raw materials, particularly those with significant quantities like scrap, pig iron, DRI, and lime, are transported in bulk.

Data quality and sources:

Data quality is compliant with ISO 14025:2006. All primary data were collected for the calendar year 2024 (January 2024 to December 2024). All background data come from the Sphera MLC 2024.2.

Allocation:

With any multi-product system, allocation rules are defined to relate the system inputs and outputs to each of the products. Several methods are documented in ISO 14040:2006 and ISO Technical Report 14049. The main co-products (slag) for Electric Arc Furnace are allocated. Scrap inputs in EAF, including pre-consumer scrap, are considered 'burden-free.' Externally sourced pre-consumer scrap is treated as post-consumer scrap, meaning the only burdens considered are transportation (accounted for in A2) and end-of-life scenarios (waste processing, transport, and destination). For these scraps, economic allocation was considered not feasible. Whereas, the main co-products in Hot rolling mill, Plate mill, Pickling line, and Galvanizing lines are economically allocated. For all background data used in the model, the standard allocation assumptions of the used datasets were maintained.

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

| | Production | | | Installation | | Use Stage | | | | | | | End-of-Life | | | | Next product system |
|----------------------|---------------------|---------------------------|---------------|----------------------------|----------------------------|-------------------|-------------|--------|-------------|---------------|------------------------|-----------------------|-----------------------------|------------------|---|----------|-------------------------------|
| | Raw material supply | Transport to manufacturer | Manufacturing | Transport to building site | Installation into building | Use / application | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction / demolition | Transport to EoL | Waste processing for reuse, recovery, recycle | Disposal | Reuse, recovery, or recycling |
| Module | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Modules declared | X | X | X | NR | X | NR | NR | NR | NR | NR | NR | NR | X | X | X | X | X |
| Geography | Africa, Asia and EU | | | | | | | | | | | | GLO | GLO | GLO | GLO | GLO |
| Specific data used | 25.37% (GWP-GHG) | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation - products | Not relevant | | | | | | | | | | | | | | | | |
| Variation – Sites | Not relevant | | | | | | | | | | | | | | | | |

X- Module declared. NR- Not reported.

Content information

MAGREEN Sandwich Panel Content

| Product Components | Weight ¹ , kg | Post-consumer recycled material, weight % | Biogenic material, weight |
|--------------------|--------------------------|---|---------------------------|
| Steel | 5.235 | 61.38% | 0 |
| MDI | 0.934 | - | 0 |
| POLYOL | 0.590 | - | 0 |
| PENTANE | 0.053 | - | 0 |
| Total | 6.183 | - | - |

¹: these numbers are the average values of product compositions.

| Packaging Material | Weight, kg | weight-% of the product | Weight biogenic carbon, kg C/kg |
|--------------------|------------|-------------------------|---------------------------------|
| Stretch Film | 0.030 | 0.434% | 0 |
| Scotch | 0.010 | 0.148% | 0 |
| EPS Blocks | 0.016 | 0.232% | 0 |

Products do not contain any substances that can be included in “Candidate List of Substances of Very High Concern for Authorization” and raw materials used are not part of the EU REACH regulation.



Results of the environmental performance indicators

The environmental performance of the functional unit of 1 m² of MAGREEN Sandwich panel with a total self-weight of 6.813 kg/m² are reported below using the parameters and units specified in PCR 2019:14 v1.3.4.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Mandatory impact category indicators according to EN 15804+A2:2019

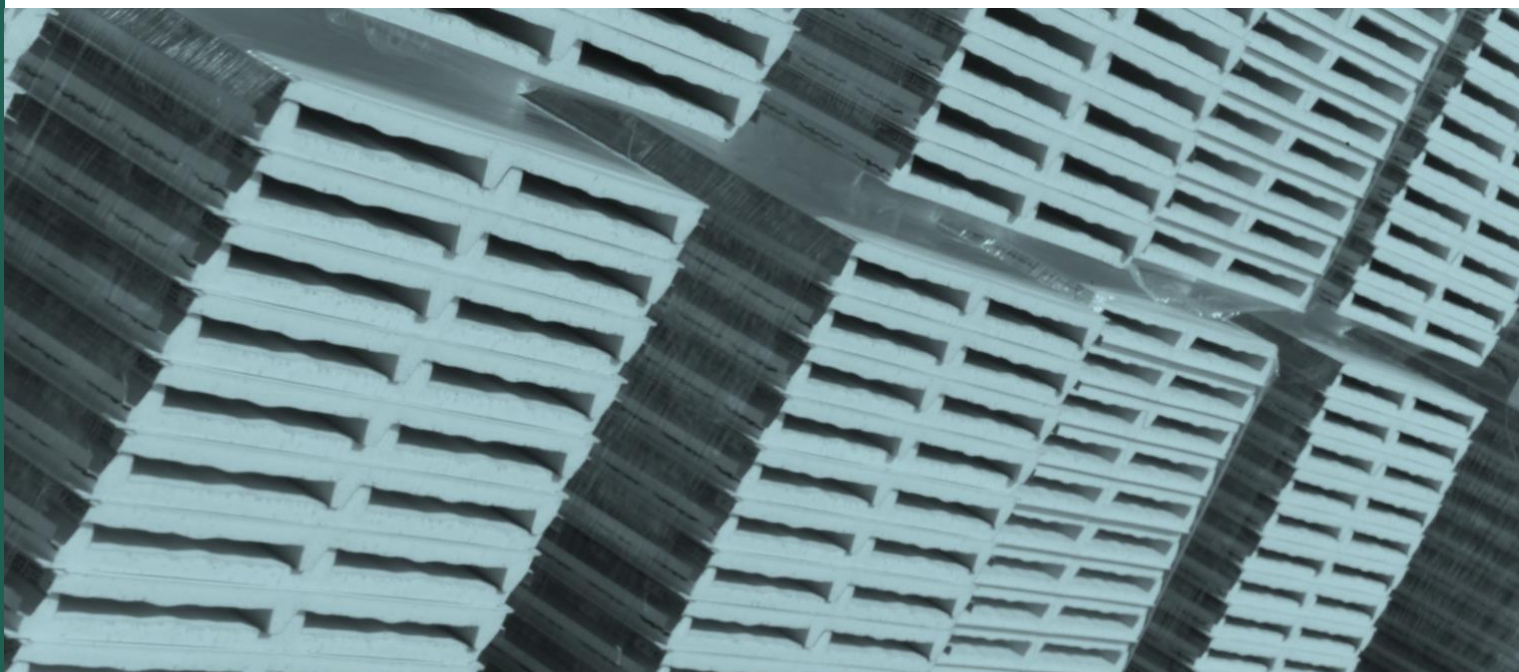
| Results per 1 m ² of MAGREEN Sandwich panel | | | | | | | | |
|--|---|-----------------|----------|----------|----------|----------|-----------|-----------|
| Impact indicators | Unit | A1-A3 | A5 | C1 | C2 | C3 | C4 | D |
| GWP-total | kg CO ₂ eq. | 8.86E+00 | 1.28E-01 | 0.00E+00 | 5.87E-02 | 3.63E+00 | 7.78E-04 | -3.01E+00 |
| GWP-fossil | kg CO ₂ eq. | 8.85E+00 | 1.28E-01 | 0.00E+00 | 5.62E-02 | 3.63E+00 | 7.73E-04 | -3.01E+00 |
| GWP-biogenic | kg CO ₂ eq. | 5.22E-03 | 7.03E-06 | 0.00E+00 | 2.48E-03 | 2.07E-04 | -3.26E-09 | -1.10E-02 |
| GWP-luluc | kg CO ₂ eq. | 2.47E-03 | 2.13E-06 | 0.00E+00 | 4.05E-06 | 1.12E-05 | 4.64E-06 | -3.39E-04 |
| ODP | kg CFC -11 eq. | 2.70E-11 | 2.15E-14 | 0.00E+00 | 1.21E-15 | 3.25E-13 | 2.08E-15 | -1.21E-11 |
| AP | Mole of H ⁺ eq. | 2.00E-02 | 3.74E-05 | 0.00E+00 | 3.05E-04 | 2.15E-03 | 5.49E-06 | -5.38E-03 |
| EP- freshwater | kg P eq. | 1.88E-05 | 5.53E-09 | 0.00E+00 | 9.63E-09 | 8.04E-08 | 1.76E-09 | -2.59E-06 |
| EP- marine | kg N eq. | 5.54E-03 | 1.16E-05 | 0.00E+00 | 1.56E-04 | 1.04E-03 | 1.41E-06 | -1.07E-03 |
| EP- terrestrial | Mole of N eq. | 5.95E-02 | 1.79E-04 | 0.00E+00 | 1.71E-03 | 1.20E-02 | 1.56E-05 | -1.04E-02 |
| POCP | kg NMVOC eq. | 2.33E-02 | 3.02E-05 | 0.00E+00 | 3.03E-04 | 2.68E-03 | 4.32E-06 | -3.83E-03 |
| ADPE | kg Sb eq. | 2.08E-04 | 1.88E-10 | 0.00E+00 | 7.61E-10 | 3.65E-09 | 5.01E-11 | -3.88E-07 |
| ADPF | MJ | 1.74E+02 | 3.28E-02 | 0.00E+00 | 8.02E-01 | 9.46E-01 | 1.02E-02 | -4.08E+01 |
| WDP | m ³ world equiv. | 1.10E+00 | 1.30E-02 | 0.00E+00 | 9.56E-05 | 3.58E-01 | 8.85E-05 | -2.54E-01 |
| Acronyms | Caption: GWP - total = global warming potential; GWP - fossil = global warming potential (fossil fuel only); GWP - biogenic = global warming potential (biogenic); GWP - luluc = global warming potential (land use only); ODP = ozone depletion; AP = acidification terrestrial and freshwater; EP freshwater = eutrophication potential (freshwater); EP - marine = eutrophication potential (marine); EP- terrestric = eutrophication potential (terrestrial); POCP = photochemical ozone formation; ADPE = abiotic depletion potential (element); ADPF = abiotic depletion potential (fossil); WDP = water scarcity. | | | | | | | |

Additional mandatory and voluntary impact category indicators

| Results per 1 m ² of MAGREEN Sandwich panel | | | | | | | | |
|--|---|----------|----------|----------|----------|----------|----------|-----------|
| Impact indicators | Unit | A1-A3 | A5 | C1 | C2 | C3 | C4 | D |
| GWP-GHG* | kg CO ₂ eq. | 8.88E+00 | 1.28E-01 | 0.00E+00 | 5.62E-02 | 3.63E+00 | 7.75E-04 | -3.01E+00 |
| Acronyms | GWP-GHG*= The indicator is calculated with characterization factors from IPCC AR6 GWP 100, excl biogenic carbon, and includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. | | | | | | | |

Resource use indicators according to EN 15804+A2:2019

| Results per 1 m ² of MAGREEN Sandwich panel | | | | | | | | |
|--|---|----------|----------|----------|----------|----------|----------|-----------|
| Impact indicators | Unit | A1-A3 | A5 | C1 | C2 | C3 | C4 | D |
| PERE | MJ | 6.69E+01 | 1.05E-02 | 0.00E+00 | 3.48E-03 | 1.98E-01 | 1.78E-03 | -8.57E+00 |
| PERM | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PERT | MJ | 6.69E+01 | 1.05E-02 | 0.00E+00 | 3.48E-03 | 1.98E-01 | 1.78E-03 | -8.57E+00 |
| PENRE | MJ | 1.74E+02 | 3.28E-02 | 0.00E+00 | 8.02E-01 | 9.46E-01 | 1.02E-02 | -4.08E+01 |
| PENRM | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PENRT | MJ | 1.74E+02 | 3.28E-02 | 0.00E+00 | 8.02E-01 | 9.46E-01 | 1.02E-02 | -4.08E+01 |
| SM | kg | 4.18E+00 | 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 |
| NRSF | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FW | m ³ | 4.75E-02 | 3.06E-04 | 0.00E+00 | 1.30E-05 | 8.42E-03 | 2.70E-06 | -9.08E-03 |
| Acronyms | Caption: PERE = Use of renewable primary energy excluding the renewable primary energy resource used as raw materials; PERM = Use of renewable primary energy as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding the non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water | | | | | | | |



Output flows & Waste Indicators according to EN 15804+A2:2019

| Results per 1 m ² of MAGREEN Sandwich panel | | | | | | | | |
|--|--|----------|----------|----------|----------|----------|----------|-----------|
| Impact indicators | Unit | A1-A3 | A5 | C1 | C2 | C3 | C4 | D |
| HWD | kg | 2.69E-07 | 2.41E-11 | 0.00E+00 | 1.20E-11 | 4.21E-10 | 2.54E-12 | -1.36E-07 |
| NHWD | kg | 1.19E-01 | 2.72E-03 | 0.00E+00 | 5.52E-06 | 1.83E-02 | 5.17E-02 | -3.19E-02 |
| RWD | kg | 1.74E-03 | 9.26E-07 | 0.00E+00 | 8.75E-08 | 3.65E-05 | 1.07E-07 | -1.77E-03 |
| CRU | kg | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| MER | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EEE | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EET | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Acronyms | Caption: HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU: Components for re-use, MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy | | | | | | | |

Additional environmental performance indicators according to EN 15804+A2:2019

| Results per 1 m ² of MAGREEN Sandwich panel | | | | | | | | |
|--|--|----------|----------|----------|----------|----------|----------|-----------|
| Impact indicators | Unit | A1-A3 | A5 | C1 | C2 | C3 | C4 | D |
| PM | Disease incidences | 2.56E-07 | 2.07E-10 | 0.00E+00 | 1.11E-09 | 5.95E-09 | 6.89E-11 | -4.88E-08 |
| IR | kBq U235 eq. | 2.02E-01 | 9.85E-05 | 0.00E+00 | 6.41E-06 | 5.72E-03 | 1.24E-05 | -2.92E-01 |
| ETF | CTU _e | 8.47E+01 | 1.23E-02 | 0.00E+00 | 1.67E+00 | 2.87E-01 | 6.79E-03 | -4.21E+00 |
| HTP-c | CTU _h | 6.01E-07 | 1.34E-12 | 0.00E+00 | 2.51E-11 | 2.51E-11 | 1.39E-13 | -9.39E-10 |
| HTP-nc | CTU _h | 8.22E-08 | 6.17E-11 | 0.00E+00 | 3.73E-10 | 3.76E-10 | 5.36E-12 | -9.82E-09 |
| SQP | Pt | 1.43E+01 | 1.04E-02 | 0.00E+00 | 2.38E-03 | 2.10E-01 | 2.81E-03 | -4.85E+00 |
| Acronyms | Caption: PM = Particulate matter emissions; IR = Ionising radiation, human health; ETF= Eco-toxicity (freshwater); HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Soil quality potential/Land use related impact. | | | | | | | |

References

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