# ENVIRONMENTAL PRODUCT DECLARATION

## In accordance with ISO 14025 and EN 15804:2012+A2:2021 :

ENVIRONMENTAL FOOTPRINT INSTITUTE

# MASONRY BLOCKS
## (HOLLOW & SOLID)

**Manufactured by : EMCON LLC**

| | |
|---|---|
| **Programe:** | **The EFI Program** |
| **Programme operator:** | **The Environmental Footprint Institute** |
| **EPD Reference number:** | **250101EPD CR:P-3100** |
| **Issue date:** | **23.01.2025** |
| **Valid until:** | **22.01.2030** |
| **Geographical Scope** | Manufactured in **DUBAI (UAE)** and distributed in **United Arab Emirates** |

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## 1.0 INTRODUCTION

This report contains the environmental performance of the manufacturing process of **MASONRY BLOCKS (SOLID & HOLLOW),** Manufactured by **EMCON LLC.** located in Post Box # 62942 Dubai, United Arab Emirates. This Environmental Product Declaration (EPD) has been developed using the Life Cycle Assessment (LCA) methodology. The environmental impact values calculated are expressed to One-Ton of Masonry Block.

The assessed life cycle includes all phases in the manufacturing process of masonry blocks in a "cradle to gate with options (A1-A5, C, D)" scope. This LCA covers transportation of raw materials, production, distribution of final product to the customer and end of life stages.

This EPD has been conducted according to the program operator regulations and it has been verified in accordance with The Environmental Footprint Institute. The EPD regulation is a system for the international use of Type III Environmental Declarations, according to ISO 14025:2006. Not only the system, but also its applications, is described in the Programmer's Product Category Rules (PCR). This report has been made following the specifications given in the European standard EN 15804:2012+A2:2019/AC:2021.

## 2.0 COMPANY INFORMATION

EMCON L.L.C. was established by Al Naboodah Laing in 1978 to supply concrete blocks to the construction industry in UAE and was part of the group till June 2000.

EMCON gradually emerged stronger and bigger, supplying to more than 3000 major projects in UAE and serving more than 700 customers. EMCON has successfully supplied to prestigious projects like Burj Khalifa, Burj Al Arab, Emirates Tower, Airport Expansion and Grand Hyatt to name a few.

EMCON is fully equipped and geared to meet new challenges with its present capacity of producing a variety of concrete blocks and interlocking tiles to serve the construction industry. Situated in Al Quoz Industrial area of Dubai and Hamriya Free Zone (Sharjah), we are equipped with modem plants such as MASA 9001 XL to produce standard and special range of products. Our Deliveries to site are achieved by our fleet of vehicles which are all fitted with mechanical off-loading facility.

EMCON have many specialty products and we are known for our innovative products range such as Concrete Lightweight and Normal weight Masonry Blocks, Thermal Insulated Blocks, Concrete Interlock pavers, Concrete Tiles, Concrete Kerbs...etc.

EMCON blocks and interlocking tiles are manufactured under strict quality-controlled conditions using high quality materials to ensure high class products are delivered to the clients to suit their needs.

### Certifications

MANAGEMENT SYSTEM CERTIFICATION
DNV
ISO 9001 • ISO 14001
ISO 45001

# MASONRY BLOCKS (HOLLOW & SOLID)
**Manufactured by EMCON LLC**

## Sustainable Practices

EMCON LLC is dedicated to eco-friendly and sustainable practices by incorporating backward and forward integration into its manufacturing processes:

- Sourcing raw materials from the nearest suppliers to minimize the environmental impact of transportation.
- Utilizing recycled materials and reducing waste to further lower the carbon footprint and environmental impact.

# 4.0 PRODUCT INFORMATION

## 4.1 Analyzed Product

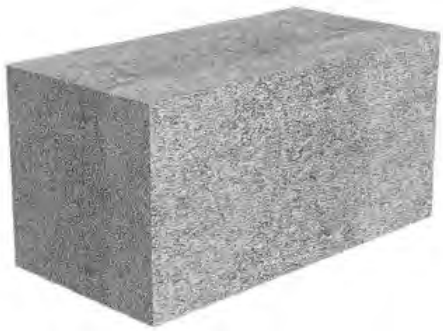
The assessed system in this Environmental Product Declaration (EPD) comprises the full life cycle of **Solid Masonry Blocks, Hollow Masonry Blocks** with different sizes manufactured by Emcon LLC in its facility in Dubai, United Arab Emirates. This assessment has been done using the production data of year 2023-2024.

## 4.2 Technical Details

Emcon manufactures and sells the following types of Masonry Blocks :

- **Solid Blocks:** Typically made from concrete, solid masonry blocks are dense and offer high compressive strength, making them ideal for load-bearing applications. They provide durability, thermal mass, and sound insulation. The blocks are available in various sizes ie. L = 390 mm to 400 mm, W = 100mm to 300mm and H = 200mm to 190 mm.

- **Hollow Blocks:** These blocks feature internal voids, reducing their weight and material usage while maintaining strength. Hollow blocks are commonly used for partition walls and non-load-bearing structures and offer thermal insulation properties. The blocks are available in various sizes ie. L = 390 mm to 400 mm, W = 100mm to 300mm and H = 200mm to 190 mm.



Solid Blocks

Hollow Blocks

## 4.2 Product Applications

To use the masonry block in construction, start by preparing a level foundation and applying a mortar bed where each block will be placed. Carefully position each block, aligning it to ensure the structure remains level and plumb. Stagger the joints between blocks to enhance stability, and maintain a consistent spacing of approximately 10 mm between each block for proper bonding. Allow the mortar to cure adequately, which will ensure a strong, durable wall. This method yields a robust structure with excellent load-bearing capabilities, suited for various building applications.

Note: The values provided above represent the ranges for all products. For specific technical specifications, please refer to the Technical Data Sheet for each individual product.

# 5.0 LCA INFORMATION

This EPD is intended for diverse applications, including industry databases, publications, and communication within the business-to-business (B2B) landscape. Specifically designed for the environmental assessment of buildings, EPDs allow stakeholders to access crucial information regarding a product's environmental performance. This tailored design facilitates B2B communication, enabling companies to make environmentally conscious decisions when selecting materials and components for construction projects. The primary target audience for EPDs is both business-to-business (B2B) interactions, where companies can exchange and evaluate environmental information, and business-to-consumer (B2C) scenarios, where end-users can make informed, sustainable choices based on the disclosed environmental impact of products.

The Life Cycle Assessment (LCA) and associated environmental impacts presented in this EPD are based on the total production of both solid and hollow blocks, reflecting the combined output of the two products.

## 5.1 Declared Unit

The Declared Unit of the Life Cycle Assessments is One-ton of **MASONRY BLOCKS** plus the proportional part of packaging. All direct and indirect environmental impacts, as well as the use of resources, are reported referred to this unit. This EPD presents the environmental impacts associated to the LCA of the analyzed products

## 5.2 Time Representativeness

Manufacturing facility specific data from **EMCON LLC** are based on 1 year average for process data (Reference year January to December 2024). The following rules for time scope of data were applied - < 10 years for background data and < 2 years for manufacturer's data.

## 5.3 LCA Software and Database

Version 3.17.4.0 of software Air.e LCA™ with Ecoinvent™ 3.10.0 database has been used for LCA modeling and impacts calculations. EN15804 system model is used in this LCA.

## 5.4 System Boundaries

This EPD covers all product stages from “cradle to gate with options (A1-A5, C, D)”, i.e this LCA covers Production stage A1-A3, Transportation A4, Application of Masonry Blocks A5, End of life stages C1-C4 and Resource recovery stage D according to EN 15804 + A2/AC:2021.

The system boundaries of this environmental study encompass not only the company-controlled processes but also include upstream and downstream activities such as fuel extraction, material production, and electricity generation, which are not directly managed by the company.

All related direct and indirect environmental impacts related to these elements have been calculated and were included in the LCAs in this EPD. The stage B1,B2,B3,B4,B5,B6 and B7 is not included in this EPD.

**Upstream Processes (A1: Raw Material Supply):** Production of the product starts with mainly raw material production and transportation from different parts of the world and some locally sourced. ‘Raw material supply’ includes raw material extraction before production.

**Core Processes (A2: Transportation, A3: Manufacturing, A4: Transport, A5: Application):** Transport is considered for the delivery of raw materials to the plant and the movement of materials within the facility. Electricity is consumed during the production of masonry blocks. These blocks are distributed to customers at various locations. The production process starts with the receipt and handling of raw materials, followed by mixing, molding, curing, quality inspection, marking, packaging, and storage in the warehouse before final distribution. To create a scenario for the A4 phase, all masonry blocks distributed from January to December 2024 have been analyzed to represent typical transportation patterns, including international transport where relevant. The transport vehicles used include 3.5-7.5-ton trucks and larger >32-ton trucks, following Euro 5 emissions standards. In the A5 phase, The installation in the building is not consider in this EPD. However this stage will model the end-of-life of the packaging, which are assumed to be incinerated in municipal waste treatment plant.

| Scenario Details | Description |
|---|---|
| Vehicle used for transport | 3.5-7.5t & >32t trucks, Euro 5. |
| Vehicle capacity | 3.5 -7.5 tons and 25 tons |
| Fuel type and consumption | Diesel, 0.38 liters per km |
| Capacity utilization (including empty drums) | 50% as assumed in Ecoinvent |
| Bulk transportation | Mass of the transported product. |

**Module C1 (Demolition):** In Module C1, the demolition of masonry blocks involves the use of heavy machinery, such as excavators, to remove and break down the blocks. The environmental impact includes fuel consumption by machinery, emissions from demolition activities, and waste handling. A significant portion of the blocks may be recycled or reused as aggregate, reducing the need for new materials. The demolition process thus contributes to the overall environmental impact, though the potential for recycling helps mitigate some of these effects.

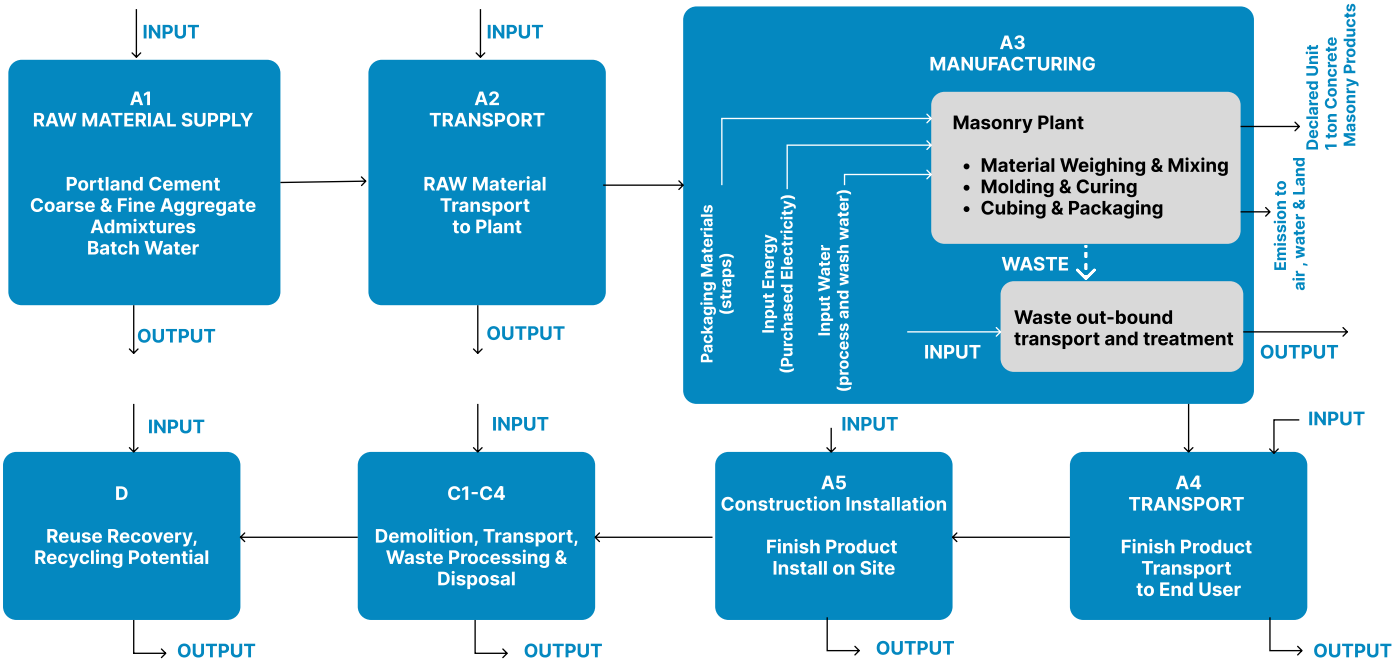
**Module C2 (Transport to Waste Treatment Facility):** In Module C2 assumes that the demolished masonry blocks are transported to a nearby waste treatment facility using a Euro 6 truck. The average distance to the facility is set at 5 kilometers.

**Module C3 (Waste Processing):** For Module C3, At the waste treatment plant, waste that can be reused, recycled or recovered for energy is separated and diverted for further use. It can be assumed that 100% of the concrete blocks are transported to a waste treatment plant in Abu Dhabi, where the blocks are crushed and separated. About 100% of concrete is recycled. The process losses of the waste treatment plant are assumed to be negligible (C3).

**Module C4 (Disposal):** In Module C4, it is assumed that 100% of the masonry block material used in construction is transported to a recycling facility, where it is processed for potential reuse or recycling. So the disposal of material is considered zero.

**Module D (Reuse, Recycling & Recovery Potential) -** Due to the recycling potential of concrete, they can be crushed and used as secondary raw material, which avoids the use of virgin raw materials. The 100 % of concrete going to waste processing is converted into secondary raw materials after recycling. The recycled material content in the concrete itself is assumed to be 0 % (D).

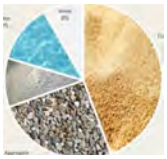
## 5.5 MANUFACTURING FLOW AND SYSTEM BOUNDARIES DIAGRAM




**The scope of this EPD is "cradle to gate with options".**
Possible scopes of the LCA defined in the European standard EN 15804:2012+A2:2019/AC:2021 are :

| | Production Stage | | | Construction Stage | | Use Stage | | | | | | | End of Life Stage | | | | Resourse Recovery Stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw Materials | Transport | Manufacturing | Transport | Construction Installation | Use Stage | Maintenance | Repair | Replacement | Refurbishment | Operational Energy Use | Operational Water Use | Deconstruction & 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 |
| Module Declared | X | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | UAE | UAE | UAE | UAE | UAE | - | - | - | - | - | - | - | UAE | UAE | UAE | UAE | UAE |
| Specific Data | GWP>90% | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation Products | GWP<10% | | | | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation Sites | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

X = Included, ND=Module not declared, NR= Module not relevant

| Scope of this Life Cycle Assessment 'Cradle to Gate with Options' | | | | | |
|---|---|---|---|---|---|
| A1 Raw Materials Production | A2 Transport raw materials | A3 Manufacture | A4 Distribution | C1-C4 End of use Stage | D Recovering & Recycling |
|    |   |  |  |   |  |
| Raw Materials and Chemicals | Transport from supplier by land or sea | Manufacturing Phase | Transport to customers by trucks & Ships | Demolition, transport, disposal. | Reuse, recovery and recycling potential |

## 5.6 Content Declaration

| Product Components | Masonry Blocks(%) (Solid & Hollow) | Post-consumer material, weight-% | Biogenic material, weight-% and ton C/ton |
|---|---|---|---|
| Cement | 10-15 | 0 | 0 |
| Admixture | 0.1-0.8 | 0 | 0 |
| Fine Aggregates | 0-5 | 0 | 0 |
| Course Aggregates | 60-70 | 0 | 0 |
| Water | 4-8 | 0 | 0 |
| Polystyrene Sheet | 0 | 0 | 0 |
| Aggregates Limestone | 15-20 | 0 | 0 |

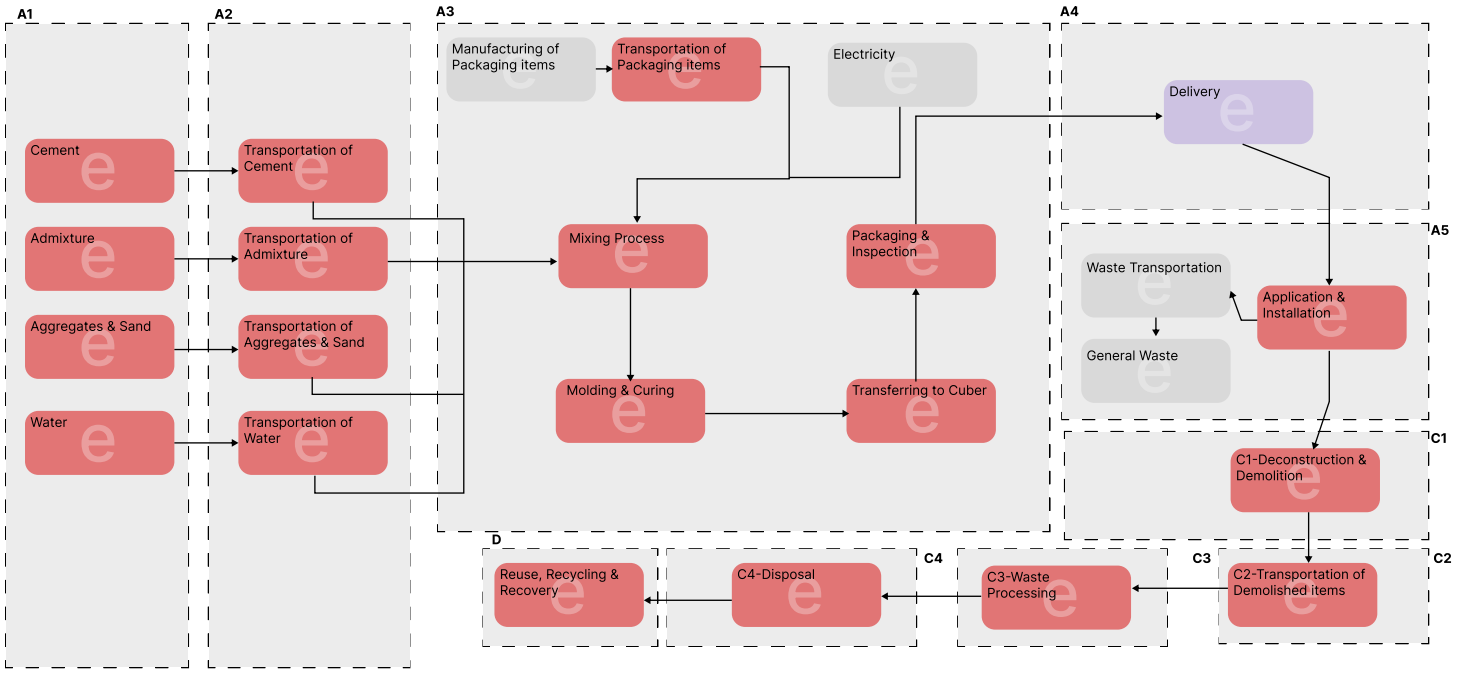
| Packaging Materials | | | |
|---|---|---|---|
| Packaging Materials | Weight(ton) per DU | Weight % (Versus the Product) | Weight biogenic carbon, ton C/ton |
| Nylon Straps | 1.330E-04 | 1.330E-02 | 0* |
| | | | |

*Biogenic carbon content is not presents since the packaging weights less than a 5% over the product's weight.

## 5.7 Substance listed in the "Candidate List of SVHC"

During the life cycle of the product no hazardous substance listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" has been used in a percentage higher than 0.1% of the weight of the product.

## 5.8 Life Cycle Assessment Modeling




## 5.9 More information

**Cut-off rules:** more than 99% of the materials and energy consumption have been included. The Polluter Pays Principle and the Modularity Principle have been followed.

**Allocations:** The allocation of common inputs and outputs is based on the general allocation rule what represents the proportion of production of every specific product in overall production expressed in tons. Generic process data for production of input materials were used.

**Electricity:** A specific dataset with the Life Cycle Inventory (LCI) corresponding to the electricity mix in United Arab Emirates, has been used for this LCA.

- **Source** : 2020: IEA World Energy Statistics and Balances, United Arab Emirates, Total primary energy supply, 2020
- **Global warming potential (excluding biogenic Carbon)** : 0.6279 kg of CO2 eq /kWh (based on Climate Change (fossil) indicator)

**Calculation Rules:** Datasets from Ecoinvent 3.10.0 with emission factors for raw materials and generic chemicals have been characterized to adjust them to the characteristics of manufacturing of suppliers or counties where suppliers are located. Specific datasets with the emissions factors corresponding to the fuel combustion of production plant and machinery have been developed for these LCAs. Indirect emissions due to diesel production and transportation are also included in the environmental impact. Minor components are not directly related to the product, with less than 1% impact, such as office supplies, has been excluded from the assessment.

All transports of components have been included in the LCA considering real distances travelled by materials used for production. It is estimated in a global scale according to Ecoinvent™ criteria. As exact port locations are not known in detail, transport distances have been calculated from a one of the ports in the country of origin to the factory. Operation in port has also been excluded. Road distances calculated using Google Maps. Maritime distances calculated using Marine Traffic Voyage Planner. By Products Assignment There are no By Products in this Environmental Product Declaration. Hence, no allocation had to be applied.

# 6.0 ENVIRONMENTAL PERFORMANCE

## 6.1 Potential Environmental Impacts

In the following tables, the environmental performance of the declared units "One-ton of Masonry Block (solid & Hollow) " is presented for the EMCON LLC product totalized and for every sub-phase of the life cycles. During the assessment it was not evident to distinguish the differences in the consumption of electricity, water, diesel, raw material and chemicals during the manufacturing process of the Masonry Block. Hence, the calculation is based on total production vs total consumption against production of the product. The Life Cycle Assessment (LCA) and associated environmental impacts presented in this EPD are based on the total production of both solid and hollow blocks, reflecting the combined output of the two products.

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

EN 15804+ A2 disclaimers for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

### Core Environmental Impact Indicators

| Impact Category | Unit | A1 | A2 | A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | Total | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Climate change (GWP) –fossil | kg CO2e | 1.22E+02 | 1.43E+01 | 2.00E+01 | 1.96E+01 | 8.85E-03 | 0.00E+00 | 3.61E+00 | 9.58E+00 | 4.38E+00 | 0.00E+00 | 1.94E+02 | -1.42E+01 |
| Climate change (GWP) –biogenic | kg CO2e | 9.16E-02 | 2.19E-03 | 3.27E-03 | 3.00E-03 | 7.48E-02 | 0.00E+00 | 2.87E-04 | 1.50E-03 | 3.48E-04 | 0.00E+00 | 1.77E-01 | -1.13E-02 |
| Climate change (GWP) –LULUC | kg CO2e | 3.18E-02 | 5.69E-03 | 1.43E-03 | 7.77E-03 | 3.73E-06 | 0.00E+00 | 3.13E-04 | 3.90E-03 | 3.81E-04 | 0.00E+00 | 5.13E-02 | -1.32E-02 |
| Climate change (GWP) – total | kg CO2e | 1.22E+02 | 1.43E+01 | 2.00E+01 | 1.96E+01 | 8.37E-02 | 0.00E+00 | 3.61E+00 | 9.59E+00 | 4.38E+00 | 0.00E+00 | 1.94E+02 | -1.43E+01 |
| Ozone depletion | kg CFC-11e | 5.71E-07 | 2.00E-07 | 4.44E-07 | 2.73E-07 | 7.07E-11 | 0.00E+00 | 5.52E-08 | 1.42E-07 | 6.70E-08 | 0.00E+00 | 1.75E-06 | -1.35E-07 |
| Acidification | mol H+e | 4.06E-01 | 4.78E-02 | 4.23E-02 | 6.52E-02 | 2.86E-05 | 0.00E+00 | 3.25E-02 | 2.20E-02 | 3.95E-02 | 0.00E+00 | 6.56E-01 | -7.59E-02 |
| Eutrophication, aquatic freshwater | kg Pe | 1.36E-02 | 1.12E-03 | 1.03E-03 | 1.53E-03 | 2.27E-06 | 0.00E+00 | 1.05E-04 | 7.57E-04 | 1.28E-04 | 0.00E+00 | 1.82E-02 | -3.97E-03 |
| Eutrophication, aquatic marine | kg Ne | 1.16E-01 | 1.56E-02 | 9.63E-03 | 2.13E-02 | 2.45E-04 | 0.00E+00 | 1.51E-02 | 5.17E-03 | 1.84E-02 | 0.00E+00 | 2.02E-01 | -1.41E-02 |
| Eutrophication, terrestrial | mol Ne | 1.31E+00 | 1.68E-01 | 9.12E-02 | 2.30E-01 | 8.45E-05 | 0.00E+00 | 1.65E-01 | 5.50E-02 | 2.01E-01 | 0.00E+00 | 2.22E+00 | -1.69E-01 |
| Photochemical ozone formation | kg NMVOCe | 3.71E-01 | 6.64E-02 | 5.48E-02 | 9.07E-02 | 5.70E-05 | 0.00E+00 | 4.93E-02 | 3.07E-02 | 5.98E-02 | 0.00E+00 | 7.23E-01 | -5.29E-02 |
| Abiotic depletion, minerals & metals | kg Sbe | 3.66E-04 | 4.58E-05 | 1.29E-04 | 6.26E-05 | 1.33E-08 | 0.00E+00 | 1.26E-06 | 3.12E-05 | 1.52E-06 | 0.00E+00 | 6.37E-04 | -8.57E-05 |
| Abiotic depletion of fossil resources | MJ | 7.46E+02 | 2.12E+02 | 3.30E+02 | 2.89E+02 | 7.21E-02 | 0.00E+00 | 4.98E+01 | 1.42E+02 | 6.04E+01 | 0.00E+00 | 1.83E+03 | -1.93E+02 |
| Water use | $m^3$ W.ed | 2.03E+01 | 1.10E+00 | 3.02E+00 | 1.50E+00 | 1.87E-03 | 0.00E+00 | 1.38E-01 | 7.59E-01 | 1.68E-01 | 0.00E+00 | 2.69E+01 | -1.59E+01 |

## Additional Environmental Impact Indicators

| Impact Category | UNIT | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | Total | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Particulate matter | Incidence | 5.03E-06 | 1.26E-06 | 3.90E-10 | 0.00E+00 | 9.14E-07 | 5.70E-07 | 5.07E-06 | 0.00E+00 | 1.28E-05 | 5.07E-06 |
| ionizing radiation, human | kBq U234e | 2.02E+00 | 2.26E-01 | 5.70E-05 | 0.00E+00 | 2.11E-02 | 1.12E-01 | 2.56E-02 | 0.00E+00 | 2.41E+00 | 2.56E-02 |
| Eco-toxicity (freshwater) | CTUe | 3.44E+02 | 7.22E+01 | 3.52E-01 | 0.00E+00 | 6.61E+00 | 3.57E+01 | 8.03E+00 | 0.00E+00 | 4.67E+02 | 8.03E+00 |
| Human toxicity, cancer effects | CTUe | 3.20E-07 | 1.01E-07 | 5.04E-12 | 0.00E+00 | 1.41E-08 | 5.04E-08 | 1.71E-08 | 0.00E+00 | 5.03E-07 | 1.71E-08 |
| Human toxicity, non-cancer | CTUe | 1.03E-06 | 1.71E-07 | 2.13E-10 | 0.00E+00 | 5.84E-09 | 8.48E-08 | 7.09E-09 | 0.00E+00 | 1.30E-06 | 7.09E-09 |
| Land use related impacts/soil | Dimensionless | 4.02E+02 | 1.64E+02 | 9.33E-02 | 0.00E+00 | 3.30E+00 | 8.15E+01 | 4.01E+00 | 0.00E+00 | 6.55E+02 | 4.01E+00 |

EN 15804+A2 disclaimer for Ionizing radiation, human health. 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.

## Environmental Impact -GWP-GHG

| Impact Category | UNIT | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | Total | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GEP-GHG | kg CO2e | 1.58E+02 | 1.98E+01 | 8.80E-02 | 0.00E+00 | 3.66E+00 | 9.66E+00 | 4.45E+00 | 0.00E+00 | 1.95E+02 | 4.45E+00 |

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator Is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Use of Natural Resources

| Impact Category | UNIT | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | Total | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Renewable PE used as energy | MJ | 4.84E+01 | 3.60E+00 | -9.51E-01 | 0.00E+00 | 2.89E-01 | 1.79E+00 | 3.50E-01 | 0.00E+00 | 5.35E+01 | 3.50E-01 |
| Renewable PE used as materials | MJ | 0.00E+00 | 0.00E+00 | 9.53E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 9.53E-01 | 0.00E+00 |
| Total use of renewable PE | MJ | 4.84E+01 | 3.60E+00 | 2.45E-03 | 0.00E+00 | 2.89E-01 | 1.79E+00 | 3.50E-01 | 0.00E+00 | 5.45E+01 | 3.50E-01 |
| Non-renew. PE used as energy | MJ | 1.21E+03 | 2.74E+02 | -5.56E-01 | 0.00E+00 | 4.72E+01 | 1.35E+02 | 5.73E+01 | 0.00E+00 | 1.72E+03 | 5.73E+01 |
| Non-renew. PE used as materials | MJ | 1.76E+01 | 0.00E+00 | 6.25E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.82E+01 | 0.00E+00 |
| Total use of non-renewable PE | MJ | 1.22E+03 | 2.74E+02 | 6.85E-02 | 0.00E+00 | 4.72E+01 | 1.35E+02 | 5.73E+01 | 0.00E+00 | 1.74E+03 | 5.73E+01 |
| Use of secondary materials | Kg | 3.93E-01 | 1.23E-01 | 2.86E-05 | 0.00E+00 | 1.96E-02 | 6.12E-02 | 2.38E-02 | 0.00E+00 | 6.21E-01 | 2.38E-02 |
| Use of renewable secondary fuels | MJ | 2.21E-01 | 1.57E-03 | 6.10E-07 | 0.00E+00 | 5.12E-05 | 7.82E-04 | 6.22E-05 | 0.00E+00 | 2.23E-01 | 6.22E-05 |
| Use of non-renew. Secondary fuels | 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 |
| Use of net fresh water | m3 | 5.90E-01 | 3.66E-02 | 4.48E-05 | 0.00E+00 | 3.37E-03 | 1.85E-02 | 4.09E-03 | 0.00E+00 | 6.53E-01 | 4.09E-03 |

## End of Life - waste

| Impact Category | UNIT | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | Total | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazardous waste | Kg | 4.07E+00 | 4.81E-01 | 9.82E-05 | 0.00E+00 | 5.27E-02 | 2.38E-01 | 6.40E-02 | 0.00E+00 | 4.90E+00 | 6.40E-02 |
| Non-hazardous waste | Kg | 8.22E+01 | 9.03E+00 | 3.47E-03 | 0.00E+00 | 7.20E-01 | 4.46E+00 | 8.74E-01 | 0.00E+00 | 9.73E+01 | 8.74E-01 |
| Radioactive waste | Kg | 4.96E-04 | 5.52E-05 | 4.59E-08 | 0.00E+00 | 5.18E-06 | 2.74E-05 | 6.29E-06 | 0.00E+00 | 5.91E-04 | 6.29E-06 |

Note: No radioactive waste is produced during EMCON LLC operation.

## End of Life - Outflows

| Impact Category | UNIT | A1-A3 | A4 | A5 | B1-B7 | C1 | C2 | C3 | C4 | Total | D |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Components for reuse | 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 |
| Materials for recycling | Kg | 2.74E-02 | 2.02E-03 | 1.27E-06 | 0.00E+00 | 1.27E-04 | 1.00E-03 | 1.55E-04 | 0.00E+00 | 3.07E-02 | 1.55E-04 |
| Materials for energy recovery | Kg | 1.11E-04 | 1.77E-05 | 4.67E-09 | 0.00E+00 | 6.46E-07 | 8.82E-06 | 7.85E-07 | 1.62E-03 | 1.76E-03 | 7.85E-07 |
| Exported energy - electricity | MJ | 1.76E-01 | 2.00E-02 | 1.64E-05 | 0.00E+00 | 2.14E-03 | 9.92E-03 | 2.59E-03 | 0.00E+00 | 2.10E-01 | 2.59E-03 |
| Exported energy - thermal | MJ | 1.24E-01 | 4.03E-02 | 7.69E-06 | 0.00E+00 | 1.12E-03 | 2.01E-02 | 1.36E-03 | 0.00E+00 | 1.86E-01 | 1.36E-03 |

### Biogenic Carbon Content

| Details | Unit | A1-A3 |
|---|---|---|
| Biogenic carbon content in product | Kg C | 0 |
| Biogenic carbon content in accompanying packaging | Kg C | 0 |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2. "Reading example: 1.57E-03 = 1.57*10-3 = 0.00157"

*Disclaimer: "According to the EN 15804:2012+A2:2019 standard, the LCIA results are relative expressions translating impacts into environmental themes such as climate change, ozone depletion, etc. (midpoint impact categories). Thus, the LCIA results do not predict impacts on category endpoints such as impact on the extinction of species or human health. In addition, the results do not provide information about the exceeding of thresholds, safety margins or risks".*

## 6.2 Interpretation of LCA Study Results

In general terms, as it is shown in the table of core environmental impact indicators, A1-A3 modules have the higher impact, representing above 80% of the whole impact. A4 module has a less impact. C2 and C4 module has little impact too, representing at most 5% and 5% respectively of the whole impact. Finally, Module D represents savings between 10% of the total impact.

# 7.0 Mandatory Statements

Explanatory material can be obtained from EPD owner and/or LCA author. Contact information can be found below. The verifier and The Program Operator do not make any claim or present any responsibility about the legality of the product.

The EPD owner has the sole ownership, liability, and responsibility for the EPD. The LCA Author shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

EPDs within the same product category but registered in different EPD programmes 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.

## 8.0 VERIFICATION

| | |
|---|---|
| Diffusion Institution | The Environmental Footprint Institute<br>Calle CIRCE 49A<br>Madrid 28022 Spain<br>www.environmentalfootprintinstitute.org |
| EPD Registration Number | 250101EPD CR:P-3100 |
| Published | 23-01-2025 |
| Valid until | 22-01-2030 |
| Product Category Rules | PCR P-3100: Construction products in general (EN15804) |
| Product Group Classification | UN CPC 3751 |
| Reference year for Data | January 2024 - December 2024 |
| Geographical Scope | United Arab Emirates |

| |
|---|
| Product category rules (PCR): Under the general rules of the Environmental Footprint Institute and PCR P-3100: Construction products in general (EN-15804) |
| PCR review was conducted by: The Environmental Footprint Institute. |
| Independent verification of the declaration and data, according to ISO 14025:2006 and ISO 14040:<br><br>☐ EPD Process Certification (internal) ☒ EPD Verification (external) |
| Third party verifier: Mr. **Iván Jiménez**<br><br>Accredited by: The Environmental Footprint Institute. |

## 9.0 CONTACT INFORMATION

| | |
|---|---|
| **EPD Owner** | **EMCON LLC**<br>23rd St - Al Quoz Industrial Area 3<br>Dubai, UAE<br>Tel : +971 4 347 3400<br>www.emcongcc.com |
| **LCA Author** | **Name : Mehmood Khan**<br>**CQES International LLC**<br>Shams Business Center<br>Tel : +971 5 85879085<br>sales@cqesint.com<br>www.cqesint.com |
| **Programme Operator** | **THE ENVIRONMENTAL FOOTPRINT INSTITUTE**<br>Calle Circe 49A Madrid, Spain<br>www.environmentalfootprintinstitute.com<br>info@environmentalfootprintinstitute.com |

## 10.0 ADDITIONAL INFORMATION

### 10.1 Action against Erosion, Environmental Restoration, and Landscaping of the work.

Application of measures to prevent erosion, restore the environment, and landscape the job includes restoring all elements immediately connected to it. The restoration of other related items indirectly is also suggested, including work roads, auxiliary facilities, and loan and landfill lands.

In the areas of air protection, EMCON LLC makes an effort to stop pollution and lessen its damaging effects on the environment management of both waste and water. The foundation of quality and environmental policy is a long-term growth plan built on recognized and global trends that have been expertly evaluated in relation to the development of potential clients' needs.

Instruction for proper use of the product, e.g. To minimize the energy or water consumption or to improve the durability of the product;- Increasing product quality and value without raising production's energy intensity or environmental burdens through ongoing technical advancements and equipment replacement.

### 10.2 Information on Recycling

All the regulations related to the disposal are followed. Circular Economy Strategy is deployed to ensure the open and close loop recycling is done

### 10.3 Information related to Sector EPD

This is not a sector EPD.

### 10.4 Differences versus previous versions

This is the first version of the EPD.

## 11.0 References

LCA Report: Life Cycle Inventory of MASONRY BLOCKS by EMCON LLC.

Software: Air.e LCA Version 3.17.4.0 www.solidforest.com

Main database: Ecoinvent 3.10.+0 www.ecoinvent.org

Geographical scope of the EPD: United Arab Emirates.

ISO 14040:2006 “Environmental management -- life cycle assessment -- principles and framework”;

ISO 14044:2006 “Environmental management -- life cycle assessment -- requirements and guidelines”;

ISO 14020:2000 “Environmental Labels and declarations - General Principles

ISO 14025:2006 “Environmental labels and declarations -- type III environmental declarations - principles and procedures”.

EN 15804+A2:2019/AC:2021 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

General Programme Instructions of the Environmental Footprint Institute
Product Category Rules: P-3100: Construction products in general (EN-15804)


BUILDING A CONCRETE FUTURE