ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

MPA Masonry Dense Concrete Block Sector EPD
Mineral Products Association

EPD HUB, HUB-1652
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Mineral Products Association
Address	The Old Rectory, Main Street, Glenfield, Leicester, United Kingdom, LE3 8DG
Contact details	masonry@mineralproducts.org
Website	https://mpamasonry.org/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B1, and modules C1-C4, D
EPD author	Matthew Butcher MPA Masonry
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Xinyuan Zhang, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	MPA Masonry Dense Concrete Block Sector EPD
Additional labels	-
Product reference	-
Place of production	United Kingdom
Period for data	Calendar year 2021
Averaging in EPD	Multiple manufacturers
Variation in GWP-fossil for A1-A3	+5.20 / - 8.51 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2
Declared unit mass	190 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	8.92E+00
GWP-total, A1-A3 ($kgCO_2e$)	8.98E+00
Secondary material, inputs (%)	0.22
Secondary material, outputs (%)	95
Total energy use, A1-A3 (kWh)	21.6
Net freshwater use, A1-A3 (m^3)	0.54

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

MPA Masonry is part of the Mineral Products Association, the trade association for the aggregates, asphalt, cement, concrete, dimension stone, lime, mortar and industrial sand industries. www.mineralproducts.org
As such MPA is not a manufacturer in its own right but represents the significant majority of concrete block manufacturers across the UK and has collected and collated data from its membership in the preparation of this Sector Level EPD.
Contributing Manufacturers:
Breedon GB Materials
CCP Ltd
CEMEX
Forterra Building Products Ltd
Hillhouse Group Ltd
Interfuse Ltd
Plasmor Ltd
Tarmac Building Products Ltd
Thakeham Tiles Ltd
Thomas Armstrong Concrete Blocks Ltd
Stowell Concrete Ltd

PRODUCT DESCRIPTION

Dense concrete blocks are comprised of cementitious material, aggregates and water. Dense blocks are manufactured to BS EN 771-3
Dense concrete blocks have a range of applications including, but not limited to, inner and outer leaves of cavity walls, internal partition walls, block and beam floor infill and foundation walls below damp-proof course.

Further information can be found at https://mpamasonry.org/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	-	-
Minerals	92.491	UK
Fossil materials	0.009	UK
Bio-based materials	-	-
Water	7.5	UK

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2
Mass per declared unit	190 kg
Functional unit	-
Reference service life	100

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
×	×	×	×	×	×	MND	MND	MND	MND	MND	MND	×	×	×	×	×		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Concrete block production starts by transporting the binders, aggregates and any additives to the production facility. The MPA has used a mixture of primary data and estimates to establish average delivery distances of materials. The production materials are stored in silos, from where they are measured out and moved by conveyor into a mixer. Cement/cementitious additions are then added to the other ingredients, this material is then mixed dry. Water is then added to the mixture, followed by further mixing. The wet mix is filled into moulds and usually vibrated to settle in the mould. The blocks are then transported on an automatic line to a dryer. From the dryer, the blocks are banded and taken for storage. Whilst in storage in the stockyard carbonation will take place, this has been modelled as part of this study.

Data on waste recycling is collected from the member companies supplying data to the study. This includes both onsite and offsite recycling. Where recycling takes place offsite an assumed transportation distance of 10km is included. This is in line with previous published readymixed concrete EPDs. Study also contains modelling of carbonation occurring while blocks are in the stockyard for inclusion in module A3.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Average distance of transportation from production plant to building site/ builders merchant is calculated using member submissions to KPI data collection. For concrete blocks this is 55.26 km, and the transportation method is assumed to be lorry (Euro 6). Vehicle capacity utilisation is assumed to be 100 % which means full load. Any variety in load level across members is assumed to be negligible. Empty returns are not taken into account. While some member companies do own their own fleet it is assumed that return trips are used by third-party hauliers to serve the needs of other clients. Transportation does not cause losses as product are packaged properly.
Manual traditional installation methods are assumed for module A5, as such any energy or installation materials used during installation are assumed to be negligible. Mortar is not included in this study. An element of wastage is accounted for during installation. This is set at 3% as assumed good practice (Resusefully, 2022).

Study also contains modelling of carbonation occurring while blocks are either stored on site or at a builder's merchants for inclusion in module A5.

PRODUCT USE AND MAINTENANCE (B1-B7)

Study contains modelling of carbonation during the products 100-year reference service life in a building.
It is assumed that no maintenance is required during the product life cycle. However, only module B1 is declared.
Air, soil, and water impacts during the use phase have not been studied.

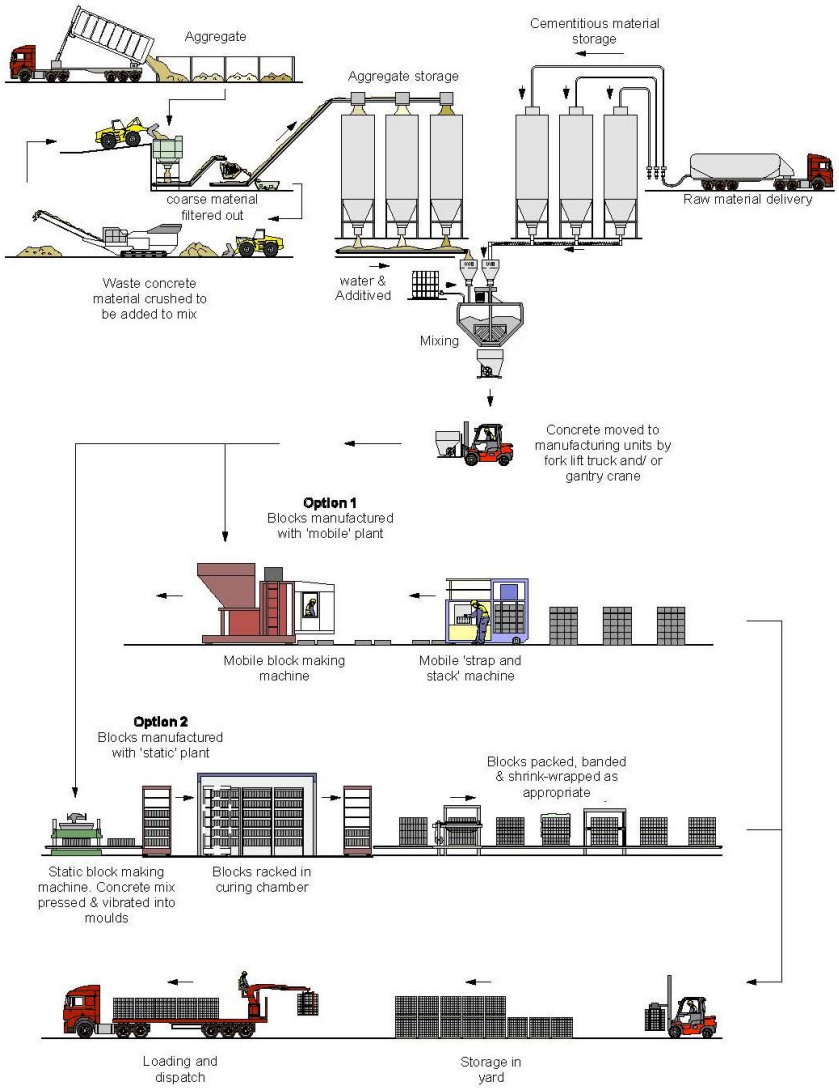
PRODUCT END OF LIFE (C1-C4, D)

Study contains modelling of carbonation during modules C1, C3 and module D.
At the end-of-life, 100% of the building is demolished and 95% recovered. During the recovery of the demolished concrete, it is assumed that 65% is processed onsite, 30% transported offsite and 5% left unprocessed. The transport distance for waste taken off site assumed to be 25km in line with values in the following EPD https://manage.epdhub.com/?epd=HUB-1152 .

It is assumed that all concrete which is processed post-demolition is crushed to a 6F2 specification. In practice, some of the recovered concrete will be crushed more finely, depending on its intended secondary use.

MANUFACTURING PROCESS

Typical Process Flow Diagram
For Light Weight & Dense Concrete Blocks



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	Allocated by mass or volume
Packaging material	Not applicable
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple manufacturers
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	+5.20 / - 8.51 %

This EPD is based on a representative product manufactured across various UK manufacturers production sites. Production data is based on 4,680,866 tonnes of production across 12 UK manufacturers. The results presented in this EPD are representative for the members participating in this study.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	6.55E+00	1.85E+00	5.74E-01	8.98E+00	9.14E-01	3.12E-01	-1.37E+00	MND	MND	MND	MND	MND	MND	5.65E-01	1.24E-01	2.88E-01	5.01E-02	-1.73E+00
GWP – fossil	kg CO_2e	6.55E+00	1.85E+00	5.21E-01	8.92E+00	9.13E-01	3.12E-01	-1.37E+00	MND	MND	MND	MND	MND	MND	5.65E-01	1.24E-01	2.88E-01	5.00E-02	-1.66E+00
GWP – biogenic	kg CO_2e	2.34E-03	8.36E-04	5.28E-02	5.59E-02	0.00E+00	8.34E-07	0.00E+00	MND	MND	MND	MND	MND	MND	1.15E-04	5.15E-05	1.33E-04	3.26E-05	-6.97E-02
GWP – LULUC	kg CO_2e	5.82E-04	8.62E-04	3.34E-05	1.48E-03	3.43E-04	5.89E-05	0.00E+00	MND	MND	MND	MND	MND	MND	6.26E-05	4.65E-05	7.22E-05	4.72E-05	-3.71E-04
Ozone depletion pot.	kg CFC_{-11}e	1.52E-07	4.35E-07	8.12E-08	6.68E-07	2.28E-07	3.31E-08	0.00E+00	MND	MND	MND	MND	MND	MND	1.34E-07	3.09E-08	1.55E-07	2.02E-08	-1.26E-07
Acidification potential	mol H^+e	2.47E-02	8.73E-03	2.15E-03	3.56E-02	2.91E-03	1.42E-03	0.00E+00	MND	MND	MND	MND	MND	MND	6.53E-03	3.95E-04	7.53E-03	4.70E-04	-1.49E-02
EP-freshwater[2)]	kg Pe	5.24E-04	1.54E-05	1.27E-05	5.52E-04	6.52E-06	1.69E-05	0.00E+00	MND	MND	MND	MND	MND	MND	2.08E-06	8.85E-07	2.40E-06	5.24E-07	-5.86E-05
EP-marine	kg Ne	3.43E-03	2.75E-03	6.59E-04	6.84E-03	6.42E-04	3.37E-04	0.00E+00	MND	MND	MND	MND	MND	MND	2.89E-03	8.72E-05	3.34E-03	1.63E-04	-2.85E-03
EP-terrestrial	mol Ne	9.51E-02	3.03E-02	8.39E-03	1.34E-01	7.12E-03	5.46E-03	0.00E+00	MND	MND	MND	MND	MND	MND	3.17E-02	9.66E-04	3.66E-02	1.79E-03	-3.71E-02
POCP ("smog")[3)]	kg NMVOCe	2.18E-02	9.60E-03	2.08E-03	3.35E-02	2.80E-03	1.43E-03	0.00E+00	MND	MND	MND	MND	MND	MND	8.72E-03	3.81E-04	1.01E-02	5.21E-04	-8.79E-03
ADP-minerals & metals[4)]	kg Sbe	3.05E-06	5.07E-06	6.32E-07	8.76E-06	2.24E-06	3.55E-07	0.00E+00	MND	MND	MND	MND	MND	MND	3.19E-07	3.04E-07	3.68E-07	1.15E-07	-1.64E-04
ADP-fossil resources	MJ	2.57E+01	2.84E+01	1.09E+01	6.50E+01	1.46E+01	2.78E+00	0.00E+00	MND	MND	MND	MND	MND	MND	8.46E+00	1.98E+00	9.76E+00	1.37E+00	-2.25E+01
Water use[5)]	m^3e depr.	9.37E-01	1.48E-01	1.59E-01	1.24E+00	6.73E-02	4.21E-02	0.00E+00	MND	MND	MND	MND	MND	MND	2.27E-02	9.14E-03	2.62E-02	4.35E-03	-9.98E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and 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 experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1.50E-07	2.13E-07	3.48E-08	3.98E-07	1.06E-07	6.45E-08	0.00E+00	MND	MND	MND	MND	MND	MND	1.75E-07	1.44E-08	1.54E-06	9.47E-09	-1.16E-07
Ionizing radiation[6]	kBq U235e	3.29E-02	1.47E-01	7.18E-02	2.52E-01	7.52E-02	1.16E-02	0.00E+00	MND	MND	MND	MND	MND	MND	3.89E-02	1.02E-02	4.48E-02	6.20E-03	-1.67E-01
Ecotoxicity (freshwater)	CTUe	3.78E+02	2.45E+01	3.01E+00	4.05E+02	1.21E+01	1.28E+01	0.00E+00	MND	MND	MND	MND	MND	MND	5.09E+00	1.65E+00	5.86E+00	8.95E-01	-2.33E+01
Human toxicity, cancer	CTUh	2.58E-10	8.35E-10	8.19E-11	1.17E-09	3.15E-10	5.55E-11	0.00E+00	MND	MND	MND	MND	MND	MND	1.95E-10	4.28E-11	2.25E-10	2.24E-11	-1.21E-09
Human tox. non-cancer	CTUh	8.05E-09	2.43E-08	1.80E-09	3.42E-08	1.23E-08	1.67E-09	0.00E+00	MND	MND	MND	MND	MND	MND	3.68E-09	1.68E-09	4.24E-09	5.85E-10	-2.28E-08
SQP[7]	-	2.75E+00	3.05E+01	3.60E-01	3.36E+01	1.70E+01	1.65E+00	0.00E+00	MND	MND	MND	MND	MND	MND	1.10E+00	2.31E+00	1.27E+00	2.93E+00	-4.26E+00

6) 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8]	MJ	4.21E+00	4.39E-01	5.75E-01	5.23E+00	1.89E-01	1.65E-01	0.00E+00	MND	MND	MND	MND	MND	MND	4.84E-02	2.56E-02	5.58E-02	1.19E-02	-2.10E+00
Renew. PER as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	4.21E+00	4.39E-01	5.75E-01	5.23E+00	1.89E-01	1.65E-01	0.00E+00	MND	MND	MND	MND	MND	MND	4.84E-02	2.56E-02	5.58E-02	1.19E-02	-2.10E+00
Non-re. PER as energy	MJ	2.57E+01	2.84E+01	9.55E+00	6.37E+01	1.46E+01	2.74E+00	0.00E+00	MND	MND	MND	MND	MND	MND	8.46E+00	1.98E+00	9.76E+00	1.37E+00	-2.25E+01
Non-re. PER as material	MJ	0.00E+00	0.00E+00	8.53E-01	8.53E-01	0.00E+00	-8.53E-01	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-re. PER	MJ	2.57E+01	2.84E+01	1.04E+01	6.45E+01	1.46E+01	1.89E+00	0.00E+00	MND	MND	MND	MND	MND	MND	8.46E+00	1.98E+00	9.76E+00	1.37E+00	-2.25E+01
Secondary materials	kg	4.25E-01	1.26E-02	6.78E-04	4.39E-01	4.11E-03	1.34E-02	0.00E+00	MND	MND	MND	MND	MND	MND	3.31E-03	5.58E-04	3.82E-03	2.88E-04	-1.36E-02
Renew. secondary fuels	MJ	3.09E+00	7.54E-05	1.89E-06	3.09E+00	3.63E-05	9.27E-02	0.00E+00	MND	MND	MND	MND	MND	MND	1.08E-05	4.92E-06	1.25E-05	7.53E-06	6.69E-07
Non-ren. secondary fuels	MJ	5.69E+00	0.00E+00	0.00E+00	5.69E+00	0.00E+00	1.71E-01	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	3.62E-02	4.06E-03	4.99E-01	5.39E-01	1.94E-03	1.63E-02	0.00E+00	MND	MND	MND	MND	MND	MND	5.14E-04	2.63E-04	5.92E-04	1.50E-03	-1.22E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.14E-02	4.36E-02	4.58E-03	6.95E-02	1.56E-02	3.05E-03	0.00E+00	MND	MND	MND	MND	MND	MND	1.13E-02	2.12E-03	1.31E-02	0.00E+00	-9.19E-02
Non-hazardous waste	kg	2.77E-01	6.55E-01	8.86E-02	1.02E+00	2.72E-01	6.12E-02	0.00E+00	MND	MND	MND	MND	MND	MND	7.96E-02	3.69E-02	9.18E-02	9.50E+00	-2.78E+00
Radioactive waste	kg	3.59E-05	1.93E-04	3.83E-05	2.67E-04	1.01E-04	1.37E-05	0.00E+00	MND	MND	MND	MND	MND	MND	5.96E-05	1.37E-05	6.87E-05	0.00E+00	-9.62E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	5.40E-01	5.40E-01	0.00E+00	1.14E+01	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.81E+02	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E-01	0.00E+00	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	6.60E+00	1.83E+00	5.15E-01	8.95E+00	9.05E-01	3.13E-01	-1.37E+00	MND	MND	MND	MND	MND	MND	5.58E-01	1.23E-01	2.80E-01	4.90E-02	-1.66E+00
Ozone depletion Pot.	kg CFC_{-11}e	2.12E-07	3.45E-07	6.71E-08	6.25E-07	1.80E-07	2.90E-08	0.00E+00	MND	MND	MND	MND	MND	MND	1.06E-07	2.45E-08	1.23E-07	1.60E-08	-1.01E-07
Acidification	kg SO_2e	1.76E-02	6.71E-03	1.54E-03	2.59E-02	2.36E-03	1.03E-03	0.00E+00	MND	MND	MND	MND	MND	MND	4.66E-03	3.20E-04	5.37E-03	3.55E-04	-1.04E-02
Eutrophication	kg PO_4^3e	5.09E-03	1.56E-03	3.38E-04	6.98E-03	5.00E-04	2.71E-04	0.00E+00	MND	MND	MND	MND	MND	MND	1.08E-03	6.79E-05	1.25E-03	7.66E-05	-2.43E-03
POCP (“smog”)	kg C_2H_4e	5.68E-04	2.61E-04	6.41E-05	8.94E-04	1.10E-04	3.45E-05	0.00E+00	MND	MND	MND	MND	MND	MND	1.02E-04	1.49E-05	1.18E-04	1.49E-05	-4.39E-04
ADP-elements	kg Sbe	1.11E-05	4.95E-06	6.30E-07	1.67E-05	2.17E-06	5.90E-07	0.00E+00	MND	MND	MND	MND	MND	MND	3.14E-07	2.95E-07	3.62E-07	1.13E-07	-1.64E-04
ADP-fossil	MJ	2.94E+01	2.84E+01	1.09E+01	6.87E+01	1.46E+01	2.89E+00	0.00E+00	MND	MND	MND	MND	MND	MND	8.46E+00	1.98E+00	9.76E+00	1.37E+00	-2.25E+01

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	6.55E+00	1.85E+00	5.21E-01	8.92E+00	9.14E-01	3.12E-01	-1.37E+00	MND	MND	MND	MND	MND	MND	5.65E-01	1.24E-01	2.88E-01	5.01E-02	-1.66E+00

9) 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). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Xinyuan Zhang, as an authorized verifier acting for EPD Hub Limited

VERIFIED ISO 14025