ENVIRONMENTAL PRODUCT DECLARATION

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

Fescon Masonry mortar M100/600

Fescon Oy

EPD HUB, HUB-2191

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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Fescon Oy
Address	Hämeenkatu 9A, 05800 Hyvinkää, Finland
Contact details	fescon@fescon.fi
Website	www.fescon.fi

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-A5, and modules C1-C4, D
EPD author	Olli-Pekka Jaakkola, Fescon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Haiha Nguyen, 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	Fescon Masonry mortar M100/600
Additional labels	Fescon Masonry mortar M100/600 Winter, Fescon Compact mortar M100/600, Fescon Compact mortar M100/600 Winter, Fescon Compact mortar Heavy M100/600, Fescon Compact mortar Heavy M100/600 Winter
Product reference	53038, 33037, 33038, 33070, 33100, 33110, 34460, 34600, 53050
Place of production	Fescon Oy, Hikiäntie 1336, 05820 Hyvinkää, Finland
Period for data	Calendar year 2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	12%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	1,16E-01
GWP-total, A1-A3 ($kgCO_2e$)	1,15E-01
Secondary material, inputs (%)	0.76
Secondary material, outputs (%)	75.4
Total energy use, A1-A3 (kWh)	0.27
Net freshwater use, A1-A3 (m^3)	0

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Fescon is Finland's largest developer and manufacturer of mortar, sand, and coating products and a solution provider for the construction industry.

PRODUCT DESCRIPTION

Masonry mortar is a cement-based dry mortar. The maximum grain size is 2.0 mm. Suitable for facade and wall partition masonry. For brick work jointing, jointing of natural and slate stones on vertical surfaces and for repairing existing mortar joints.

Further information can be found at www.fescon.fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	85-100	FIN
Fossil materials	0-15	FIN
Bio-based materials	0	-

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	0.00033

FUNCTIONAL UNIT AND SERVICE LIFE

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

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	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.

The mortar is manufactured by adding the raw materials together and mixing them as a dry blend, forming a high quality mortar. Following this process, the mix is packaged in plastic and paper bags. Eventually, the mortar is moved out and transported to the construction site.

The manufacturing processes comply with the quality standard ISO 9001:2015, environmental standard ISO 14001:2025, and occupational health and safety standard ISO 45001:2018. The provisions outlined in the relevant regulations are adhered to. Waste formed in the manufacture is sent to a licensed waste management provider.

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 is calculated as 108 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly. Also, volume capacity utilisation factor is assumed to be 100 % for the packaged products.

The mortar is mixed with water at the installation site and no material loss is assumed to happen during installation. The installation is done by machine and thus the energy consumption is deemed negligible.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end-of-life, in the demolition phase 100% of the waste is assumed to be collected as mixed construction waste. The demolition process consumes energy in the form of diesel fuel used by building machines. Energy consumption of the demolition process is assumed to be 0.01 kWh/kg (C1).

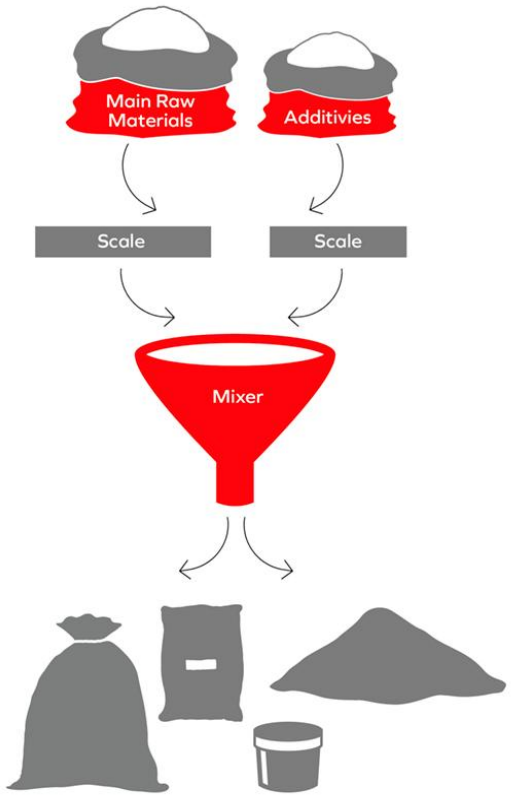
The demolished mortar is delivered to the nearest construction waste treatment plant. It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight as the declared product. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is lorry which is the most common (C2).

At the waste treatment plant, waste that can be reused, recycled or recovered for energy is separated and diverted for further use. At the beginning of 2020 waste restrictions in Finland were tightened and the amount of waste going to landfill is restricted compared to the last years, so it can be assumed that 100% of mortar is transported to a waste treatment plant. A realistic assumption is made about 80% of mortar being recycled. The process losses of the waste treatment plant are assumed to be negligible (C3). The remaining 20% of mortar is sent to landfill (C4).

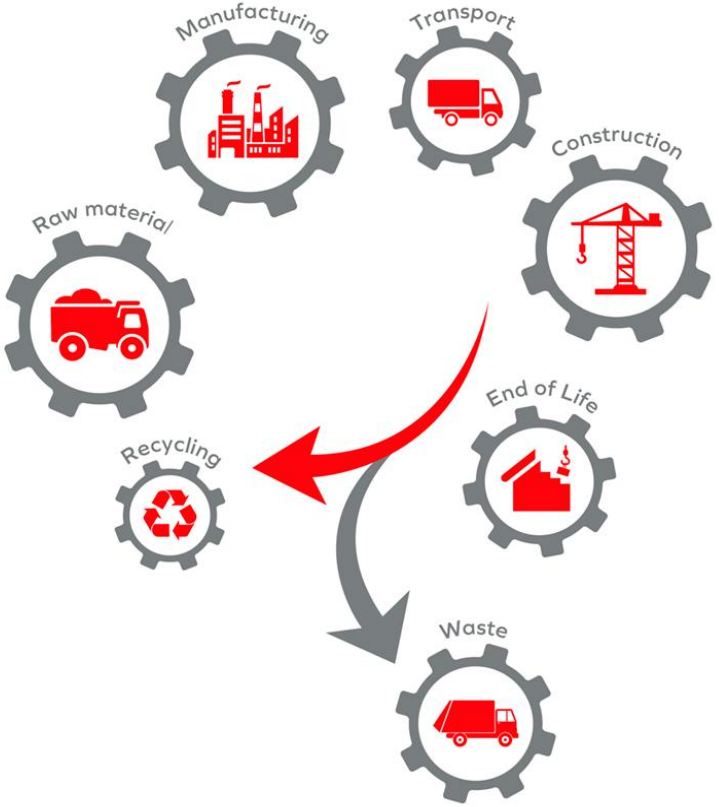
Benefits included in Module D are obtained from recycling and incineration of the packaging materials and recycling of the mortar.

MANUFACTURING PROCESS

Mortar products



Product life-cycle



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	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total volume
Variation in GWP-fossil for A1-A3	12%

All of the mortars have the same raw materials and and same manufacturing process. The variation of GWP fossil comes from ratio of substances.

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	8,28E-02	4,93E-03	2,69E-02	1,15E-01	1,58E-02	2,79E-03	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,97E-03	1,04E-02	2,25E-03	-1,94E-01
GWP – fossil	kg CO_2e	8,28E-02	4,93E-03	2,80E-02	1,16E-01	1,58E-02	1,61E-03	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,96E-03	1,04E-02	2,24E-03	-1,93E-01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,18E-03	-1,18E-03	0,00E+00	1,18E-03	MND	MND	MND	MND	MND	MND	MND	6,06E-07	1,93E-06	2,31E-05	8,82E-06	-2,54E-04
GWP – LULUC	kg CO_2e	1,42E-05	1,92E-06	5,77E-05	7,39E-05	5,45E-06	1,74E-07	MND	MND	MND	MND	MND	MND	MND	3,30E-07	1,82E-06	8,03E-06	2,27E-06	-5,23E-04
Ozone depletion pot.	kg CFC-$_{11}$e	2,17E-09	1,22E-09	2,09E-09	5,48E-09	3,84E-09	1,79E-11	MND	MND	MND	MND	MND	MND	MND	7,07E-10	1,15E-09	2,32E-09	6,82E-10	-8,76E-09
Acidification potential	mol H^+e	1,79E-04	2,12E-05	8,59E-05	2,86E-04	5,67E-05	1,02E-06	MND	MND	MND	MND	MND	MND	MND	3,44E-05	2,10E-05	8,60E-05	1,89E-05	-7,46E-04
EP-freshwater[2)]	kg Pe	2,99E-06	3,46E-08	4,33E-07	3,45E-06	2,26E-07	6,22E-09	MND	MND	MND	MND	MND	MND	MND	1,10E-08	3,93E-08	2,28E-07	3,48E-08	-3,97E-06
EP-marine	kg Ne	9,20E-06	4,83E-06	2,30E-05	3,70E-05	1,47E-05	4,45E-07	MND	MND	MND	MND	MND	MND	MND	1,52E-05	6,25E-06	3,18E-05	6,46E-06	-1,93E-04
EP-terrestrial	mol Ne	7,78E-04	5,36E-05	2,47E-04	1,08E-03	1,62E-04	3,55E-06	MND	MND	MND	MND	MND	MND	MND	1,67E-04	6,90E-05	3,50E-04	7,10E-05	-2,16E-03
POCP ("smog")[3)]	kg NMVOCe	1,88E-04	1,89E-05	7,52E-05	2,82E-04	5,75E-05	1,03E-06	MND	MND	MND	MND	MND	MND	MND	4,59E-05	2,21E-05	9,81E-05	2,05E-05	-5,71E-04
ADP-minerals & metals[4)]	kg Sbe	4,07E-08	1,19E-08	9,80E-08	1,51E-07	1,32E-07	9,62E-10	MND	MND	MND	MND	MND	MND	MND	1,68E-09	1,16E-08	3,37E-08	7,54E-09	-8,80E-07
ADP-fossil resources	MJ	1,98E-01	7,81E-02	4,65E-01	7,42E-01	2,49E-01	2,21E-03	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,48E-02	1,85E-01	5,18E-02	-1,19E+00
Water use[5)]	m^3e depr.	5,24E-03	3,57E-04	6,45E-03	1,20E-02	1,06E-03	1,68E-04	MND	MND	MND	MND	MND	MND	MND	1,20E-04	3,37E-04	1,52E-03	3,02E-04	-2,31E-02

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	2,11E-09	5,56E-10	1,12E-09	3,79E-09	1,67E-09	1,40E-11	MND	MND	MND	MND	MND	MND	MND	9,22E-10	5,74E-10	8,15E-09	3,79E-10	-9,68E-09
Ionizing radiation[6)]	kBq U235e	4,04E+00	4,01E-04	8,85E-03	4,05E+00	1,21E-03	2,73E-05	MND	MND	MND	MND	MND	MND	MND	2,05E-04	3,62E-04	1,53E-03	2,48E-04	-7,66E-03
Ecotoxicity (freshwater)	CTUe	3,03E-01	6,45E-02	3,61E-01	7,28E-01	2,01E-01	3,34E-03	MND	MND	MND	MND	MND	MND	MND	2,68E-02	6,63E-02	1,34E-01	3,84E-02	-4,19E+00
Human toxicity, cancer	CTUh	1,30E-10	1,75E-12	9,55E-12	1,42E-10	5,19E-12	4,04E-13	MND	MND	MND	MND	MND	MND	MND	1,03E-12	1,65E-12	5,81E-12	1,62E-12	-6,03E-11
Human tox. non-cancer	CTUh	2,94E-09	6,51E-11	1,65E-10	3,17E-09	2,17E-10	8,64E-12	MND	MND	MND	MND	MND	MND	MND	1,94E-11	6,65E-11	1,11E-10	2,55E-11	-1,67E-09
SQP[7)]	-	4,16E-01	8,86E-02	2,06E-01	7,11E-01	3,25E-01	2,07E-03	MND	MND	MND	MND	MND	MND	MND	5,79E-03	8,64E-02	2,38E-01	1,26E-01	-2,64E+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	5,17E-02	9,97E-04	5,92E-02	1,12E-01	3,19E-03	1,80E-04	MND	MND	MND	MND	MND	MND	MND	2,54E-04	8,68E-04	7,84E-03	8,99E-04	-1,94E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,07E-02	1,07E-02	0,00E+00	-1,07E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,91E-03
Total use of renew. PER	MJ	5,17E-02	9,97E-04	6,99E-02	1,23E-01	3,19E-03	-1,05E-02	MND	MND	MND	MND	MND	MND	MND	2,54E-04	8,68E-04	7,84E-03	8,99E-04	-1,84E-01
Non-re. PER as energy	MJ	2,66E-01	7,81E-02	4,25E-01	7,69E-01	2,49E-01	2,21E-03	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,48E-02	1,85E-01	5,18E-02	-1,17E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	4,00E-02	4,00E-02	0,00E+00	-4,00E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,61E-02
Total use of non-re. PER	MJ	2,66E-01	7,81E-02	4,65E-01	8,09E-01	2,49E-01	-3,78E-02	MND	MND	MND	MND	MND	MND	MND	4,45E-02	7,48E-02	1,85E-01	5,18E-02	-1,16E+00
Secondary materials	kg	7,59E-03	2,24E-05	8,85E-05	7,70E-03	4,23E-05	4,83E-06	MND	MND	MND	MND	MND	MND	MND	1,74E-05	2,08E-05	6,87E-05	1,86E-05	2,90E-04
Renew. secondary fuels	MJ	3,25E-02	1,91E-07	2,35E-04	3,28E-02	3,74E-07	2,03E-08	MND	MND	MND	MND	MND	MND	MND	5,70E-08	2,05E-07	1,26E-06	7,17E-07	-7,27E-04
Non-ren. secondary fuels	MJ	4,91E-02	0,00E+00	0,00E+00	4,91E-02	0,00E+00	0,00E+00	MND	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	1,23E-03	1,02E-05	2,21E-04	1,46E-03	4,06E-05	1,32E-04	MND	MND	MND	MND	MND	MND	MND	2,70E-06	9,74E-06	1,15E-04	5,58E-05	-6,34E-04

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	2,72E-04	8,45E-05	7,80E-04	1,14E-03	2,57E-04	1,19E-05	MND	MND	MND	MND	MND	MND	MND	5,96E-05	9,55E-05	3,81E-04	0,00E+00	-5,40E-03
Non-hazardous waste	kg	5,83E-03	1,44E-03	1,98E-02	2,71E-02	1,35E-02	3,50E-03	MND	MND	MND	MND	MND	MND	MND	4,19E-04	1,58E-03	3,25E-01	2,13E-01	-1,52E-01
Radioactive waste	kg	2,01E-07	5,39E-07	2,20E-06	2,94E-06	1,72E-06	9,24E-09	MND	MND	MND	MND	MND	MND	MND	3,13E-07	5,04E-07	1,22E-06	0,00E+00	-4,63E-06

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	MND	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	5,53E-05	0,00E+00	0,00E+00	5,53E-05	0,00E+00	1,73E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,52E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	9,89E-06	0,00E+00	0,00E+00	9,89E-06	0,00E+00	4,91E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	6,17E-03	0,00E+00	0,00E+00	6,17E-03	0,00E+00	1,37E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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	8,28E-02	4,93E-03	2,80E-02	1,16E-01	1,58E-02	1,61E-03	MND	MND	MND	MND	MND	MND	MND	3,31E-03	4,96E-03	1,04E-02	2,24E-03	-1,93E-01

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
18.11.2024