

ENVIRONMENTAL PRODUCT DECLARATION

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

C50/60 F5 CEM1 10MM Slip-Form Ready-Mix Concrete
London Concrete Pumping

JRL
LONDON CONCRETE PUMPING

EPD HUB, EPDHUB-0181

Publishing date 11 November 2022, last updated on 28 July 2023, valid until 11 November 2027.



Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	London Concrete Pumping
Address	4 Elstree Way, Borehamwood, Hertfordshire, WD6 1RN
Contact details	info@londonconcretepumping.co.uk

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 1.0, 1 Feb 2022 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	A1-A3, A4-A5, C1-C4 & D
EPD author	Alice Dear & Dea Dalipi
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
EPD verifier	Elma Avdyli, 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	C50/60 F5 CEM1 10MM Slip-form Ready-Mix Concrete
Additional labels	-
Product reference	-
Place of production	Vauxhall, London, SW8 1SF
Period for data	2021 Calendar Year
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 cubic metre
Declared unit mass	2384 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	3,93E2
GWP-total, A1-A3 (kgCO ₂ e)	3,94E2
Secondary material, inputs (%)	0.0165
Secondary material, outputs (%)	100.0
Total energy use, A1-A3 (kWh)	529.0
Total water use, A1-A3 (m ³ e)	3.64

PRODUCT & MANUFACTURER

ABOUT THE MANUFACTURER

London Concrete Pumping is the concrete manufacturing division of the JRL Group. LCP produce and transport a variety of concrete mixes to construction sites across London. LCP is accredited by the Quality Scheme for Ready Mixed Concrete (QSRMC).

PRODUCT DESCRIPTION

The product is a generic 1 m³ of C50/60 F5 CEM1 10MM Slip-form Ready-Mix Concrete product. The constituent proportions are, 430kg of CEM1, 965kg of 4/10 mm gravel, 800kg of 0/4 mm sand, 3L of admix and 186L of water. A C50/60 concrete mix is typically used for the core structure. Ready-mixed concrete is made by mixing coarse and fine aggregates, cement and water in controlled proportions. Chemical admixtures are used to reduce water content and improve fresh and hardened concrete properties. Delivered to site on a just-in-time basis, ready-mix concrete may be cast into any conceivable shape with almost no limit on volume. When hardened, concrete can carry substantial compressive loads by itself, but is more frequently reinforced to substantially increase its tensile and flexural strength.

Concrete to EN 206 and BS 8500 is not covered by the EU Construction Products Regulation. For the use and application of the concrete in the UK refer to BS 8500 Concrete – Complementary British Standard to /BS EN 206.

CONSTRUCTIONAL DATA

Category	Value	Unit
Thermal conductivity	1.7	W/(mK)
Gross density	2384	Kg/m ³
Characteristic compressive strength, cylinder/cube	50/60	MPa
Characteristic tensile strength	3.6	MPa
Modulus of elasticity	42	GPa

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	92	-
Fossil materials	0	-
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate.

Biogenic carbon content in product, kg C	0
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Biogenic carbon content in packaging, kg C	0
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DECLARED UNIT AND SERVICE LIFE

Declared unit	1 cubic metre
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Mass per declared unit	2384 kg
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Reference service life	60 years
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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																						
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	MNR	x																						
Raw materials			Transport		Manufacturing		Transport		Assembly		Use		Maintenance		Repair		Replacement		Refurbishment		Operational energy use		Operational water use		Deconstruction/demo		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. Also, fuels used by machines 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. There is no production loss nor is there any packaging involved for this product, and therefore is not considered in this EPD.

London Concrete Pumping purchase the raw materials for C50/60 F5 CEM1 10MM Slip-form Ready-Mix Concrete primarily from Tarmac and Hanson. Raw materials include: Portland cement (CEMI), gravel, sand, water and admix. The ready-mix concrete mix is produced in our central wet-batch

concrete plant at Vauxhall. This combines all the materials together before delivery to site.

The batching of the concrete mix happens within a closed system. As a result, the water vapour condenses and is reabsorbed by the concrete mix, and therefore is not a waste product of the batching process.

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.

The C50/60 F5 CEM1 10MM Slip-form Ready-Mix Concrete is produced at the Vauxhall, London batching plant and then delivered to construction sites across Greater London. The approximate distance is therefore an average of the past years delivery addresses which are all within a 16km radius of the batching site. The calculated approximate delivery distance is 9.9km. Concrete wagons are owned in-house, which holds Fleet Operator Recognition Scheme (FORS) Gold accreditation. All vehicles meet Euro 6 emission standards, as per ULEZ requirements within London. Vehicle capacity utilization volume is assumed to be 100% (full-load) and returned empty. Whilst there will be occasional part loads, as the transportation emissions are relatively low, the variety in volume load is assumed to be negligible. Transportation does not cause losses as product is loaded properly.

The product is delivered and mixed on site on a just-in-time basis. It is then pumped and poured into the required format for the project. The concrete is power floated once dried to provide a smooth finish.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

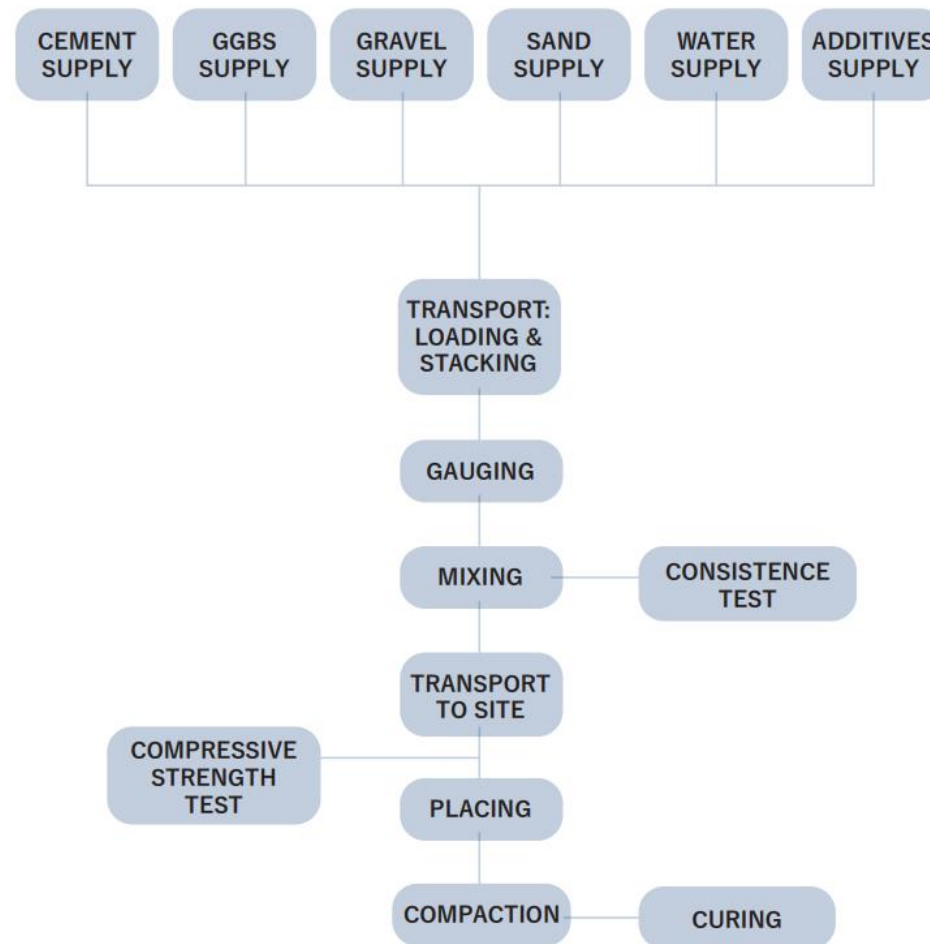
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Concrete has a service life of 60+ years and its end of life is typically the demolition of a building. 100% of concrete from a demolition site will be separated and crushed for reuse. To demolish 1m³ of concrete, around 57.6MJ is used by the demolition equipment. The average distance from our London sites to our Silvertown recycling facility is 7.4km.

At our Silvertown recycling facility, the concrete from demolition is separated according to size. The concrete is then crushed, screened and sorted into different specification grades of materials to suit customer orders and specifications.

MANUFACTURING PROCESS



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.

Water vapour produced as part of the manufacturing process has not been accounted for within this study as it is negligible. This is due to the manufacturing process happening within a closed batch system, and so the water vapour is not considered a loss or waste product. The mass difference between the wet and dry concrete has been cut-off as this difference is also negligible for the purpose of this EPD.

LIFE CYCLE ASSESSMENT INFORMATION

Period for data	2021 calendar year
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DECLARED AND FUNCTIONAL UNIT

Declared unit	1 cubic metre
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Mass per declared unit 2384 kg

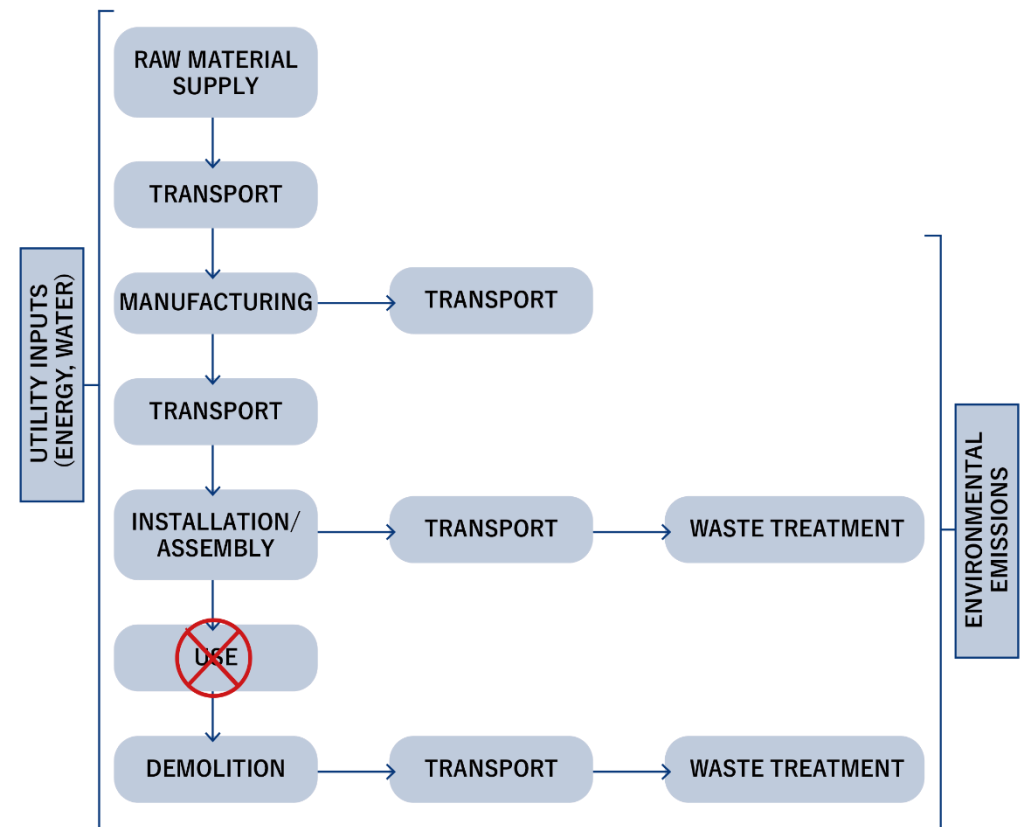
SYSTEM BOUNDARY

This is a cradle to gate with options EPD covering the following modules: A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4

(Transport), A5 (Installation) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

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 volume
Packaging materials	Not applicable
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by volume

The manufacturing energy for this concrete mix was calculated by considering the energy used from the total consumption of the batching plant in relation to the volume of C32/40 produced within the calendar year 2021.

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-

The distances travelled for A4-A5 and C2 has been averaged for the delivery destinations during the 2021 calendar year. These have all been within greater London and originate from the Vauxhall batching plant and crushed at our Silvertown facility.

Estimates and allocations have been assigned only for transport distance from the batching plant to the London-based sites that are supplied. As there are multiple sites, an average was taken to provide an accurate estimate of the distance the product is transported.

However, our end-of-life protocol follows a structured system by which all demolished material is processed and assessed for reuse and recyclability.

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. Ecoinvent and One Click LCA databases were used 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 ₂ e	3,79E2	1,28E1	1,48E0	3,94E2	3,98E0	2,51E1	MND	MND	MND	MND	MND	MND	MND	5,3E0	0E0	9,58E0	0E0	-2,02E1
GWP – fossil	kg CO ₂ e	3,79E2	1,28E1	1,47E0	3,93E2	4,02E0	2,51E1	MND	MND	MND	MND	MND	MND	MND	5,3E0	0E0	9,58E0	0E0	-2,01E1
GWP – biogenic	kg CO ₂ e	1,9E-1	5,82E-3	1,91E-3	1,98E-1	1,83E-3	3,45E-3	MND	MND	MND	MND	MND	MND	MND	9,7E-4	0E0	1,75E-3	0E0	-6,01E-2
GWP – LULUC	kg CO ₂ e	7,22E-2	6,05E-3	2,01E-3	8,03E-2	1,9E-3	7,54E-3	MND	MND	MND	MND	MND	MND	MND	5,27E-4	0E0	9,54E-4	0E0	-2,77E-2
Ozone depletion pot.	kg CFC ₁₁ e	1,26E-5	2,89E-6	9,98E-8	1,56E-5	9,06E-7	1,67E-6	MND	MND	MND	MND	MND	MND	MND	1,13E-6	0E0	2,05E-6	0E0	-1,64E-6
Acidification potential	mol H ⁺ e	9,31E-1	3,63E-2	4,61E-3	9,72E-1	1,14E-2	8,12E-2	MND	MND	MND	MND	MND	MND	MND	5,5E-2	0E0	9,95E-2	0E0	-1,3E-1
EP-freshwater ²⁾	kg Pe	4,48E-3	1,05E-4	2,86E-5	4,62E-3	3,29E-5	2,87E-4	MND	MND	MND	MND	MND	MND	MND	1,75E-5	0E0	3,17E-5	0E0	-1,14E-3
EP-marine	kg Ne	2,4E-1	6,93E-3	1E-3	2,48E-1	2,17E-3	2,45E-2	MND	MND	MND	MND	MND	MND	MND	2,44E-2	0E0	4,41E-2	0E0	-2,82E-2
EP-terrestrial	mol Ne	2,81E0	7,72E-2	1,21E-2	2,9E0	2,42E-2	2,79E-1	MND	MND	MND	MND	MND	MND	MND	2,67E-1	0E0	4,83E-1	0E0	-3,67E-1
POCP (“smog”) ³⁾	kg NMVOce	7,16E-1	2,96E-2	2,95E-3	7,49E-1	9,29E-3	7,47E-2	MND	MND	MND	MND	MND	MND	MND	7,34E-2	0E0	1,33E-1	0E0	-9,43E-2
ADP-minerals & metals ⁴⁾	kg Sbe	1,47E-3	5,97E-5	4,17E-6	1,53E-3	1,87E-5	9E-5	MND	MND	MND	MND	MND	MND	MND	2,68E-6	0E0	4,86E-6	0E0	-1,96E-4
ADP-fossil resources	MJ	1,58E3	1,88E2	3,92E1	1,81E3	5,91E1	1,91E2	MND	MND	MND	MND	MND	MND	MND	7,12E1	0E0	1,29E2	0E0	-2,91E2
Water use ⁵⁾	m ³ e depr.	3,65E1	9,85E-1	3,04E-1	3,78E1	3,09E-1	2,47E0	MND	MND	MND	MND	MND	MND	MND	1,91E-1	0E0	3,46E-1	0E0	-3,84E1

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.

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	9,91E1	3,24E0	7,13E0	1,09E2	1,02E0	1,53E1	MND	MND	MND	MND	MND	MND	MND	4,07E-1	0E0	7,36E-1	0E0	-2,61E1
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	9,91E1	3,24E0	7,13E0	1,09E2	1,02E0	1,53E1	MND	MND	MND	MND	MND	MND	MND	4,07E-1	0E0	7,36E-1	0E0	-2,61E1
Non-re. PER as energy	MJ	1,57E3	1,88E2	3,92E1	1,79E3	5,91E1	1,9E2	MND	MND	MND	MND	MND	MND	MND	7,12E1	0E0	1,29E2	0E0	-2,91E2
Non-re. PER as material	MJ	1,8E1	0E0	0E0	1,8E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,58E3	1,88E2	3,92E1	1,81E3	5,91E1	1,9E2	MND	MND	MND	MND	MND	MND	MND	7,12E1	0E0	1,29E2	0E0	-2,91E2
Secondary materials	kg	3,93E-1	7,74E-2	2,67E-3	4,73E-1	2,43E-2	4,73E-2	MND	MND	MND	MND	MND	MND	MND	2,79E-2	0E0	5,04E-2	0E0	-3,2E-1
Renew. secondary fuels	MJ	3,72E-3	8,94E-4	1,02E-5	4,62E-3	2,81E-4	3,83E-4	MND	MND	MND	MND	MND	MND	MND	9,11E-5	0E0	1,65E-4	0E0	-2,29E-3
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	3,61E0	2,65E-2	7,12E-3	3,64E0	8,31E-3	1,96E-1	MND	MND	MND	MND	MND	MND	MND	4,33E-3	0E0	7,83E-3	0E0	-9,26E-1

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	6,76E0	2,45E-1	8,13E-2	7,09E0	7,7E-2	5,27E-1	MND	MND	MND	MND	MND	MND	MND	9,53E-2	0E0	1,72E-1	0E0	-1,7E0
Non-hazardous waste	kg	1,95E2	4,44E0	1,12E0	2E2	1,39E0	1,22E1	MND	MND	MND	MND	MND	MND	MND	6,7E-1	0E0	1,21E0	0E0	-5,01E1
Radioactive waste	kg	7,92E-3	1,28E-3	3,46E-4	9,55E-3	4,03E-4	1,27E-3	MND	MND	MND	MND	MND	MND	MND	5,02E-4	0E0	9,07E-4	0E0	-1,45E-3

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	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	1,19E2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	2,38E3	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

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 ₂ e	3,77E2	1,27E1	1,46E0	3,91E2	3,98E0	2,49E1	MND	MND	MND	MND	MND	MND	MND	5,24E0	0E0	9,47E0	0E0	-1,96E1
Ozone depletion Pot.	kg CFC ₁₁ e	1,01E-5	2,29E-6	8,77E-8	1,25E-5	7,19E-7	1,34E-6	MND	MND	MND	MND	MND	MND	MND	8,96E-7	0E0	1,62E-6	0E0	-1,36E-6
Acidification	kg SO ₂ e	7,26E-1	2,99E-2	3,65E-3	7,6E-1	9,38E-3	6,21E-2	MND	MND	MND	MND	MND	MND	MND	3,92E-2	0E0	7,09E-2	0E0	-1,01E-1
Eutrophication	kg PO ₄ ³ e	2,27E-1	6,77E-3	1,22E-3	2,35E-1	2,13E-3	1,78E-2	MND	MND	MND	MND	MND	MND	MND	9,1E-3	0E0	1,65E-2	0E0	-4,74E-2
POCP ("smog")	kg C ₂ H ₄ e	2,72E-2	1,53E-3	1,79E-4	2,89E-2	4,79E-4	2,19E-3	MND	MND	MND	MND	MND	MND	MND	8,58E-4	0E0	1,55E-3	0E0	-6,86E-3
ADP-elements	kg Sbe	7,26E-4	5,84E-5	4,19E-6	7,89E-4	1,83E-5	5,27E-5	MND	MND	MND	MND	MND	MND	MND	2,64E-6	0E0	4,78E-6	0E0	-1,94E-4
ADP-fossil	MJ	1,58E3	1,88E2	3,91E1	1,81E3	5,91E1	1,9E2	MND	MND	MND	MND	MND	MND	MND	7,12E1	0E0	1,29E2	0E0	-2,91E2

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.

Elma Avdyli, as an authorized verifier acting for EPD Hub Limited
28.07.2023

