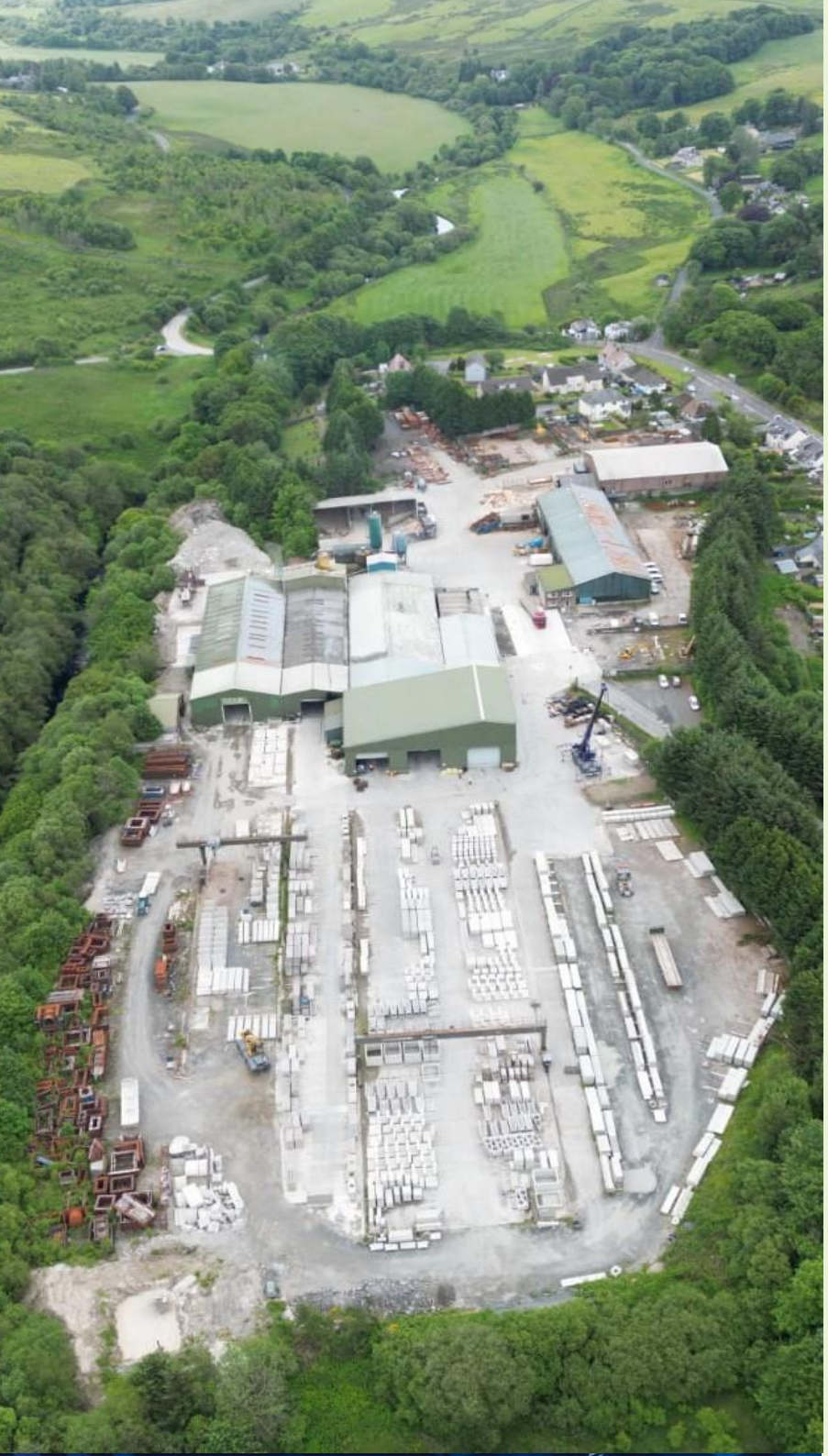
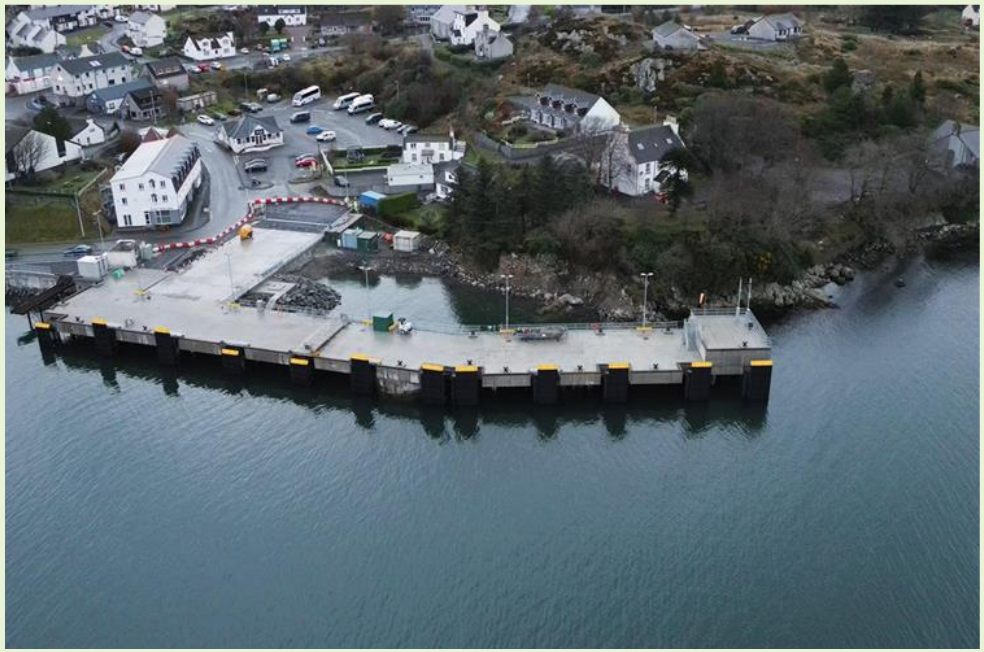


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

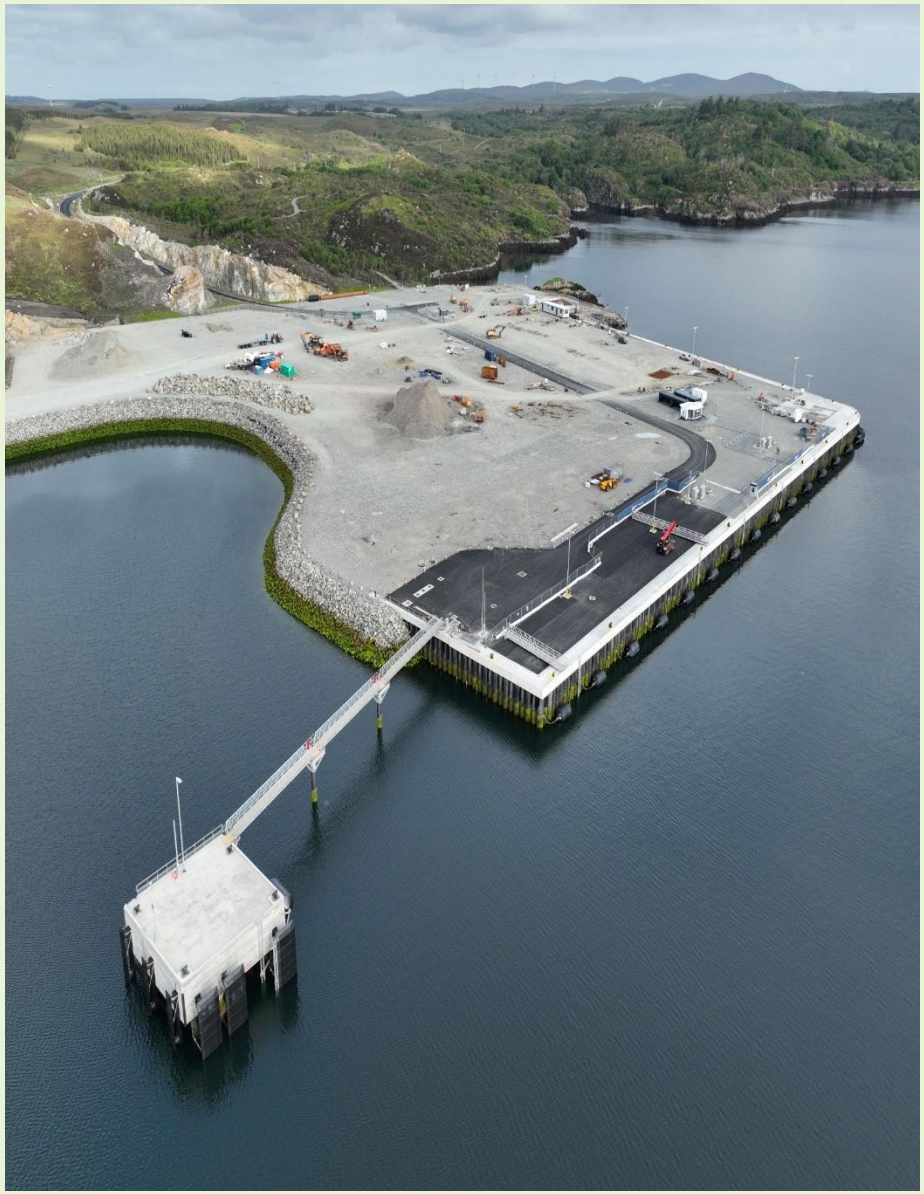
C40/50 CIIIA 40% GGBS Precast Reinforced Concrete Mix Design
Solway Precast Products Limited



EPD HUB, EPD number HUB-4036
Published on 28.09.2025, last updated on 28.09.2030

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.

Created with One Click LCA



Environmental Product Declaration
Solway Precast Products Limited
Precast Reinforced Concrete Mix Design C40/50 CIIIA 40% GGBS

In accordance with EN15804+A2 &ISO14025

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Solway Precast Products Limited
Address	Braehead, Main Street, Barrhill, Girvan, South-Ayrshire, Scotland. KA26 0QR
Contact details	Sales@solway-precast.co.uk
Website	www.solway-precast.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 1.1, 5 Dec 2023 EN 16757 Product Category Rules for concrete and concrete elements
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Andrew Gillon
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub

PRODUCT

Product name	C40/50 CIIIA 40% GGBS Precast Reinforced Concrete Mix Design
Product reference	C40/50 CIIIA 40% GGBS – mix reference 1023
Place of production	Main Street, Barrhill, Girvan, South-Ayrshire, Scotland. KA26 0QR
Period for data	1st November 2022 to 31st October 2023
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3	%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%) 64.1	64.1

This EPD is intended for business-to-business and/or business-to-consumer communication. 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.

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Cubic Meter of C40/50 CIIIA 40% GGBS reinforced concrete
Declared unit mass	2439.5kg
GWP-fossil, A1-A3 ($kgCO_2e$)	4.85E+02
GWP-total, A1-A3 ($kgCO_2e$)	4.85E+02
Secondary material, inputs (%)	2.95
Secondary material, outputs (%)	96
Total energy use, A1-A3 (kWh)	893
Net freshwater use, A1-A3 (m^3)	1.66

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Solway Precast Products Ltd, a leading manufacturer of precast concrete in the United Kingdom, operates from the historic Braehead manufacturing site in Barrhill, South Ayrshire. Since acquiring the assets in mid-August 2012, we have upheld a tradition that began in the early 1980s, continually advancing our facility to meet the demands of the modern age while prioritizing environmental sustainability.

Our extensive array of low-carbon concrete mixes stands as a testament to our dedication to reducing environmental impact. These innovative formulations deliver the same robust performance as traditional concrete while significantly lowering carbon emissions. This initiative is part of our broader commitment to sustainable development and eco-friendly manufacturing practices.

Quality is the cornerstone of Solway Precast's ethos. Each product undergoes a stringent quality assurance process, ensuring it not only meets but exceeds BSEN standards. Our diverse product range, accommodating items from a mere 100kg to an impressive 50 tonnes, is meticulously engineered for durability, safety, and environmental compliance.

Our eleven-acre site strategically positions us for logistical efficiency, further enhanced by our adoption of electric vehicles for staff transportation. This eco-conscious approach reduces our carbon footprint and exemplifies our role as a leader in sustainable industry practices.

Our skilled artisans, drawn from Wigtownshire and South Ayrshire, play an instrumental role in producing high-caliber precast products. From our Joinery workshop's custom built moulds, our rebar bending shed's and steelfixers manufacturing reinforced structures every step is taken with precision and responsibility.

Solway Precast is more than a manufacturer; we are a partner in progress. We offer detailed consultations, accurate quotes, and a supportive customer service team. Our agricultural products include versatile silo and stock wall panels and cattle slats tailored to specific needs.

By sourcing materials locally and fostering partnerships within the South West Scottish community, we reinforce our commitment to quality and sustainability. Solway Precast is not just a company; it's a community advocate dedicated to excellence and environmental stewardship

Low Carbon Commitment: At Solway Precast, our commitment to sustainability extends beyond mere rhetoric. It's woven into the very fabric of our company. Here's how:

1. Low-Carbon Concrete Mixes:
   - Our innovative concrete formulations prioritize environmental stewardship. These low-carbon mixes not only meet industry standards but also significantly reduce carbon emissions compared to traditional concrete.
   - By using locally sourced materials and optimizing our production processes, we minimize our carbon footprint while maintaining product quality.
2. Energy Generation and Efficiency:
   - We recognize that responsible energy use is crucial. That's why we've invested in energy-efficient technologies across our operations.
   - Our manufacturing facility incorporates renewable energy sources, such as solar panels. These generate clean electricity, reducing our reliance on fossil fuels.
   - Energy-efficient lighting, heating, and cooling systems further contribute to our eco-conscious approach.
3. Waste Heat Recovery:
   - Whether it's heating water or powering machinery, waste heat recovery helps us maximize efficiency and minimize waste.
4. Electric Vehicles (EVs):
   - Our commitment to sustainability extends beyond the factory floor. We've transitioned our transportation fleet to electric vehicles.
   - EVs not only reduce emissions but also serve as a visible symbol of our dedication to eco-friendly practices.
5. Community Engagement:

o We actively engage with the local community to promote sustainable practices.
o Educational workshops, partnerships with schools, and community events raise awareness about environmental conservation and inspire positive change.
6. Research and Development:
o Our R&D team continually explores new materials and processes to enhance sustainability.
o Whether it's experimenting with alternative cement blends or exploring circular economy principles, we're at the forefront of innovation.
7. Certifications and Compliance:
o Solway Precast holds relevant certifications related to environmental management and quality assurance.
o We adhere to industry standards and regulations, ensuring that our practices align with global sustainability goals.
Conclusion: Solway Precast isn't just a manufacturer; we're a catalyst for positive change. Our commitment to low carbon, energy efficiency, and community engagement defines us. As we forge ahead, we remain steadfast in our mission to build a greener, more resilient future.

PRODUCT DESCRIPTION

The C40/50 CIIIA 46% GGBS mix design will be specified by a designer for properties where salt is an issue for the concrete. This mix is commonly used on many of our products which includes,

Retail - Ground Beams, Stairs & Lift shafts,
Windfarm - Foundation Blocks & Cover Slabs
Road infrastructure – Culverts & Bridge components
Rail Infrastructure - Station components

Further information can be found at www.solway-precast.co.uk.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	2.6	Spain
Minerals	97.25	UK
Fossil materials	0.15	UK
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

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Cubic Meter of CEMIIIA 40% GGBS reinforced concrete
Mass per declared unit	2439.5kg
Functional unit	-
Reference service life	100 years

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x		x
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 process of making precast concrete while considering the environmental impacts involves several stages.

Firstly, the manufacturing of materials used in the production is considered. This includes the extraction and processing of raw materials such as sand, gravel, and cement. These materials are then combined to create the concrete mix. The environmental impact of this stage is primarily due to the energy consumption and emissions associated with the extraction and processing of these raw materials and transporting to Solway Precast factory. We know the distances that they were transported and have accounted these in our EPD calculation.

Next, the packaging materials and other ancillary materials used in the production process are taken into account. These materials can include things like moulds for shaping the concrete, as well as packaging materials for transporting the finished product. The environmental impact of this stage is mainly due to the production and disposal of these materials. We recycle all waste to either our Biomass boiler with the timber being used as fuel, the other materials are sent to a local recycler facility.

The fuels used by machines during the production process are also considered. This includes the fuel used by the machinery to mix the concrete, as well as the fuel used by vehicles to transport the raw materials. The environmental impact of this stage is primarily due to the emissions associated with the combustion of these fuels.The handling of waste formed in the production processes at the manufacturing facilities is another important consideration. This includes the disposal of any leftover concrete mix, as well as any waste generated from the cleaning of equipment and machinery. The environmental impact of this stage is mainly due to the disposal of this waste, which can contribute to landfill and pollution. We recycle any waste rebar to a local recycler for further use, aggregates and concrete waste generated on site is cruched for further internal use.

The study also considers the material losses occurring during the manufacturing processes. This can include any concrete mix that is wasted due to overproduction or errors during the production process. The environmental impact of this stage is primarily due to the wasted resources and energy. By considering all these factors, the process of making precast concrete can be optimized to minimize its

environmental impact. This can contribute to the sustainability of the construction industry and help to protect our environment for future generations.

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.

This EPD does not cover the transportation in A4 to the clients site due the many sites within the UK area we deliver to. Solway Precast don't offer the installation stage in A5 and have not accounted for these emissions. Air, soil, and water impacts during the transport and installation phases have not been studied within this EPD.

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. This project assumed 100 years of RSL, as per SFS-EN 16757:2017. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

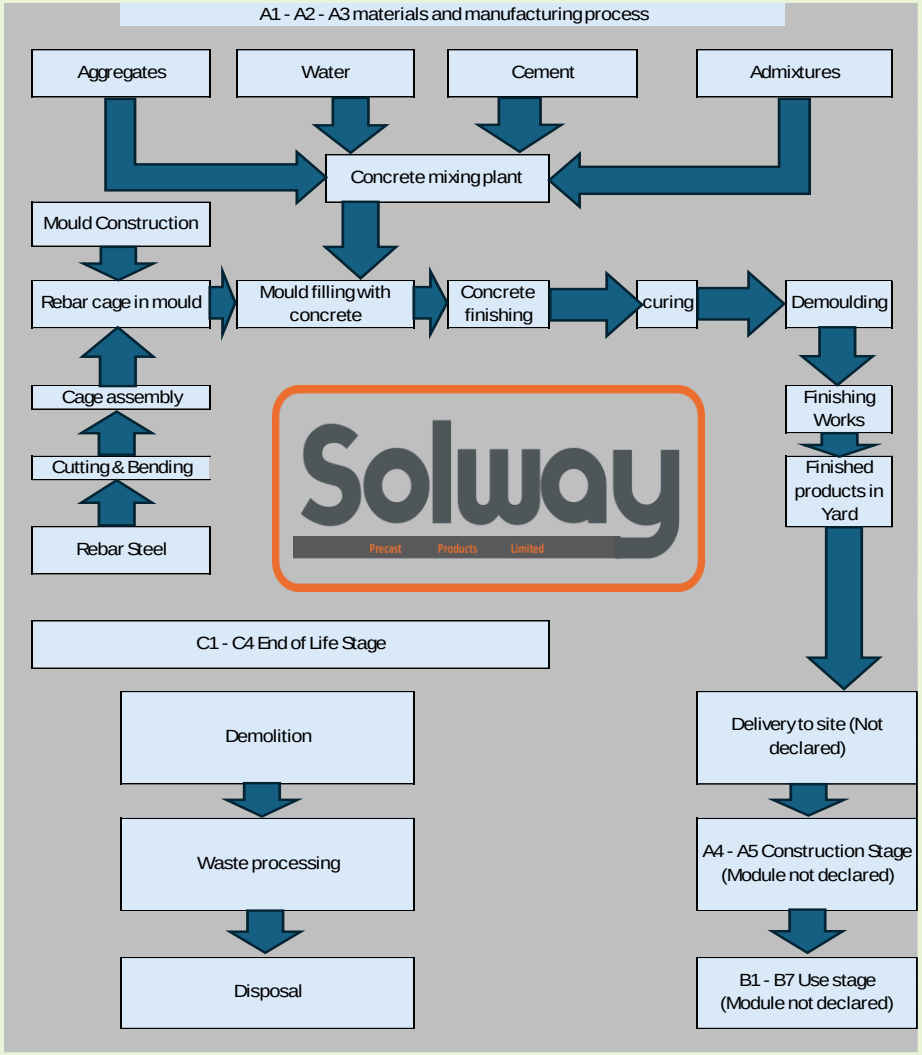
At the end-of-life, in the demolition phase 100% of the waste is assumed to be collected as separate construction waste. The demolition process consumes energy in the form of diesel fuel used by building machines. Energy consumption of a demolition process is on the average 10 kWh/m2 (Bozdağ, Ö & Seçer, M. 2007). Basing on a Level(s) project, an average mass of a reinforced concrete building is about 1000 kg/m2. Therefore, energy consumption demolition is assumed to be 10 kWh/1000 kg = 0,01 kWh/kg. The source of energy is diesel fuel used by work machines (C1).

The demolished concrete pieces are 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 with 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. It can be assumed that 100% of the concrete products are transported to a waste treatment plant, where the products are crushed and separated. About 93.6% of the reinforced concrete is recycled (Eurostat 2016). The process losses of the waste treatment plant are assumed to be negligible (C3). The remaining 6.4% of concrete and steel are assumed to be sent to the landfill (C4).

Due to the recycling potential of the concrete, it can be used as secondary raw material, which avoids the use of virgin raw materials. The 93.6% of concrete going to waste processing is converted into secondary raw materials after recycling. The recycled material content in the concrete is assumed to be 0% (D).

MANUFACTURING PROCESS



At Solway Precast we are committed to low carbon vehicles to get our employees to our workplace. We have a fleet of electric minibuses to reduce the number of car journeys and reduce the carbon footprint of our business. We also purchase green electricity from our suppliers again to drive the low carbon commitment we have as an organisation.

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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

All industrial processes from raw material acquisition and pre-processing, production, product distribution, installation, use/application of product and end-of-life management are included. The production of capital equipment, construction activities, and infrastructure, personnel-related activities, energy and water use related to company management and sales activities are excluded.
Packaging was excluded because those products does not require packaging materials.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage.

The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

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	No allocation
Packaging material	Not applicable
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	-

This is a single scenario EPD

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 v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

ENVIRONMENTAL IMPACT DATA

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

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	4.07E+02	4.23E+01	3.56E+01	4.85E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,61E+00	1,31E+01	1,44E+01	6,09E-01	-2,45E+01
GWP – fossil	kg CO_2e	4.07E+02	4.22E+01	3.56E+01	4.85E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,60E+00	1,31E+01	1,44E+01	6,09E-01	-2,44E+01
GWP – biogenic	kg CO_2e	1.33E-01	8.96E-03	8.28E-03	1.50E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,68E-04	2,97E-03	-1,46E-03	-1,94E-04	-2,33E-02
GWP – LULUC	kg CO_2e	8.90E-02	1.99E-02	1.73E-02	1.26E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,69E-04	5,87E-03	1,47E-03	3,48E-04	-2,21E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	8.81E-06	8.09E-07	9.80E-07	1.06E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,52E-08	1,94E-07	2,20E-07	1,76E-08	-1,90E-07
Acidification potential	mol H^+e	1.68E+00	1.33E-01	2.44E-01	2.05E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,25E-02	4,48E-02	1,30E-01	4,32E-03	-1,49E-01
EP-freshwater[2)]	kg Pe	9.50E-03	2.99E-03	1.86E-03	1.44E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,04E-04	1,02E-03	4,14E-04	5,01E-05	-7,44E-03
EP-marine	kg Ne	3.53E-01	4.45E-02	1.07E-01	5.04E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,51E-02	1,47E-02	6,01E-02	1,65E-03	-3,53E-02
EP-terrestrial	mol Ne	4.01E+00	4.84E-01	1.18E+00	5.67E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,65E-01	1,60E-01	6,58E-01	1,80E-02	-4,28E-01
POCP ("smog")[3)]	kg NMVOCe	1.07E+00	2.05E-01	3.48E-01	1.62E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,93E-02	6,60E-02	1,96E-01	6,44E-03	-1,18E-01
ADP-minerals & metals[4)]	kg Sbe	1.75E-03	1.26E-04	4.50E-05	1.92E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,29E-06	3,66E-05	5,15E-06	9,68E-07	-1,31E-04
ADP-fossil resources	MJ	2.05E+03	5.84E+02	6.47E+02	3.28E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E+01	1,91E+02	1,88E+02	1,49E+01	-2,93E+02
Water use[5)]	m^3e depr.	6.02E+01	3.01E+00	3.57E+00	6.67E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,18E-01	9,41E-01	4,69E-01	4,31E-02	-3,66E+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.

Tips

$2.51e2 = 2.51 \times 10^2 = 251$

$4.25e\text{-}3 = 4.25 \times \frac{1}{10^3} = 0.00425$

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	1,15E-05	2,84E-06	6,22E-06	2,06E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,25E-07	1,31E-06	2,11E-05	9,83E-08	-2,27E-06
Ionizing radiation[6)]	kBq U235e	9,18E+00	8,58E-01	1,23E+01	2,24E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,09E-02	1,66E-01	8,32E-02	9,40E-03	-2,06E+00
Ecotoxicity (freshwater)	CTUe	3,19E+03	7,50E+01	3,38E+01	3,30E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,60E+00	2,70E+01	1,03E+01	1,25E+00	-6,99E+01
Human toxicity, cancer	CTUh	1,79E-07	6,89E-09	4,74E-09	1,90E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,71E-10	2,17E-09	1,48E-09	1,12E-10	-6,53E-09
Human tox. non-cancer	CTUh	1,97E-06	3,40E-07	1,13E-07	2,42E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,87E-09	1,23E-07	2,34E-08	2,58E-09	-1,91E-07
SQP[7)]	-	2,93E+03	3,74E+02	1,96E+02	3,50E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,30E+00	1,92E+02	1,32E+01	2,94E+01	-2,74E+02

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	1,86E+02	1,10E+01	1,02E+02	2,99E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,99E-01	2,61E+00	1,19E+00	1,44E-01	-2,67E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	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	1,86E+02	1,10E+01	1,02E+02	2,99E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,99E-01	2,61E+00	1,19E+00	1,44E-01	-2,67E+01
Non-re. PER as energy	MJ	1,68E+03	5,84E+02	6,46E+02	2,91E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E+01	1,91E+02	1,88E+02	1,50E+01	-2,93E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	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	1,68E+03	5,84E+02	6,46E+02	2,91E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E+01	1,91E+02	1,88E+02	1,50E+01	-2,93E+02
Secondary materials	kg	7,19E+01	2,92E-01	1,66E-01	7,23E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,96E-02	8,11E-02	7,80E-02	3,76E-03	-3,27E-01
Renew. secondary fuels	MJ	3,22E-03	3,08E-03	4,71E-04	6,76E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,12E-05	1,03E-03	2,04E-04	7,78E-05	-2,25E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	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	1,49E+00	8,48E-02	8,56E-02	1,66E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,12E-03	2,82E-02	1,24E-02	1,55E-02	-8,69E-01

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	3,67E+00	9,07E-01	7,67E-01	5,34E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,25E-02	3,23E-01	2,09E-01	1,65E-02	-2,29E+00
Non-hazardous waste	kg	1,05E+02	1,90E+01	2,16E+01	1,46E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,15E-01	5,97E+00	2,85E+00	3,77E-01	-4,08E+01
Radioactive waste	kg	5,39E-03	2,14E-04	2,69E-03	8,29E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,12E-06	4,06E-05	2,04E-05	2,29E-06	-4,96E-04

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	8,36E+00	0,00E+00	3,35E+01	4,19E+01	MND	MND	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	2,53E+00	0,00E+00	6,22E-01	3,15E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,34E+03	0,00E+00	0,00E+00
Materials for energy rec	kg	1,25E-02	0,00E+00	0,00E+00	1,25E-02	MND	MND	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	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

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	5,15E+02	4,20E+01	3,54E+01	5,93E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,59E+00	1,31E+01	1,43E+01	6,04E-01	-2,43E+01
Ozone depletion Pot.	kg $CFC_{-11}e$	4,83E-06	6,44E-07	7,89E-07	6,26E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,37E-08	1,55E-07	1,74E-07	1,40E-08	-1,60E-07
Acidification	kg SO_2e	1,22E+00	1,01E-01	1,73E-01	1,50E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,29E-02	3,42E-02	9,11E-02	3,20E-03	-1,16E-01
Eutrophication	kg PO_4^3e	5,55E-01	2,59E-02	3,97E-02	6,21E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,34E-03	8,33E-03	2,13E-02	1,02E-03	-2,25E-02
POCP (“smog”)	kg C_2H_4e	1,05E-01	9,11E-03	1,31E-02	1,27E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,71E-03	3,05E-03	6,83E-03	3,02E-04	-1,02E-02
ADP-elements	kg Sbe	1,38E-03	1,22E-04	4,41E-05	1,55E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,26E-06	3,57E-05	5,00E-06	9,49E-07	-1,29E-04
ADP-fossil	MJ	3,18E+03	5,70E+02	4,83E+02	4,23E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,68E+01	1,88E+02	1,86E+02	1,48E+01	-2,60E+02

ADDITIONAL INDICATOR – GWP-GHG

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	4,07E+02	4,22E+01	3,56E+01	4,85E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,61E+00	1,31E+01	1,44E+01	6,09E-01	-2,44E+01

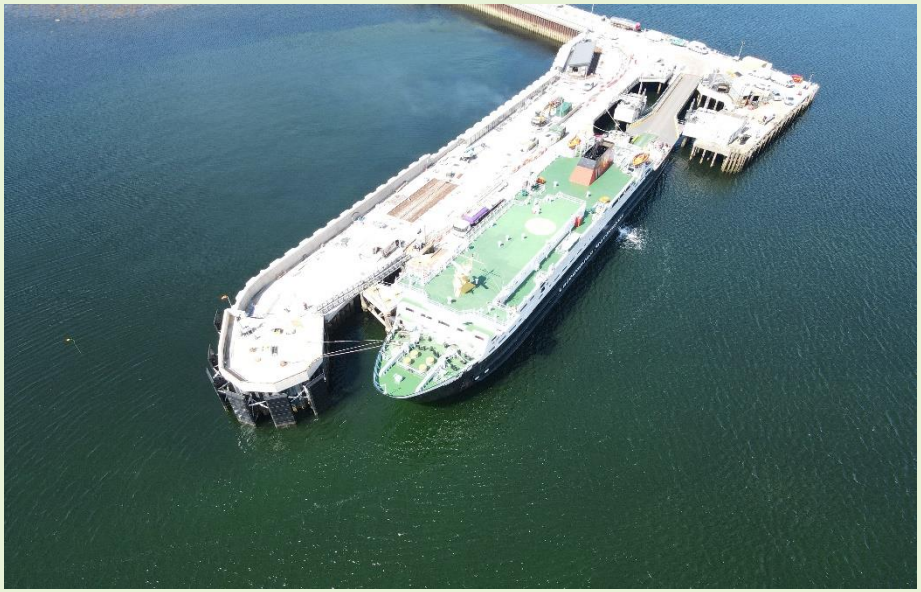
9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated 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.

CONVERSION TABLE FOR REBAR CONTENT

The correlation between the mix design and rebar content to calculate A1-A3 numbers is worked out below.

Therefore, to calculate A1-A3 (GWP Total & GWP Fossil) values for rebar content of your product per M3 of the mix design, Either increase or decrease the base figure above tables an apply the following percentages to the A1-A3 number shown within this document to match the closest figure for rebar content of your product:

Rebar (kg)	A1-A3 Product Stage (GWP TOTAL)	A1-A3 Product Stage (GWP FOSSIL)
25	4.73E+02	4.72E+02
50	4.81E+02	4.81E+02
62	4.85E+02	4.85E+02
75	4.90E+02	4.90E+02
100	4.99E+02	4.98E+02
125	5.07E+02	5.07E+02
150	5.16E+02	5.15E+02
175	5.24E+02	5.24E+02
200	5.33E+02	5.33E+02
225	5.41E+02	5.41E+02
250	5.50E+02	5.50E+02
275	5.59E+02	5.58E+02
300	5.67E+02	5.67E+02
325	5.76E+02	5.76E+02
350	5.84E+02	5.84E+02
375	5.93E+02	5.93E+02
400	6.02E+02	6.02E+02



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

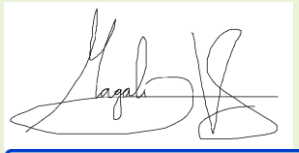
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried 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.

Magaly Gonzalez Vazquez as an authorized verifier for EPD Hub Limited
28.09.2025



VERIFIED ISO 14025