ENVIRONMENTAL PRODUCT DECLARATION

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

QF4 MW - electrically operated
Torverk Industrial Doors AB

EPD HUB, HUB-0020
Publishing date 13 Apr. 2022, last updated date 13 Apr. 2022, valid until 13 Apr. 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Torverk Industrial Doors AB
Address	Alstigen 2, 68534 Torsby
Contact details	info@torverk.se
Website	www.torverk.se

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
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4 and D
EPD author	Goodpoint AB
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Elma Avdyli, EPD Hub

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	QF4 MW
Additional labels	QF4 MW electrically operated
Product reference	QF4IE, QF4OE
Place of production	Torsby, Sweden
Period for data	2020
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	25%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m^2 of an electrically operated industrial folding door, with/without pedestrian door and/or window.
Declared unit mass	25,8 kg
GWP-fossil, A1-A3 (kgCO2e)	64,2
GWP-total, A1-A3 (kgCO2e)	58,3
Secondary material, inputs (%)	14,9
Secondary material, outputs (%)	97,3
Total energy use, A1-A3 (kWh)	464
Total water use, A1-A3 (m3e)	40

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Torverk was established in 1962 with the ambition of making economically and environmentally sustainable products by customizing door systems with the lowest operating cost, minimal service requirement and long service life.

Torverk was early on to focus on energy efficiency and already in the early 1980s we presented an industrial door with a sandwich construction. Before the ISO quality system became a practice, Torverk had developed its own quality system which is the basis for the Torverk's high quality. Innovation is and has always been a strong driver for Torverk.

Torverk's self-manufactured products should have the longest warranty on the market.

PRODUCT DESCRIPTION

Torverk's folding Q-door QF4 MW is an electrically operated industrial door. Q-Doors door leaf is 56 mm thick. The door is clad with SSABs Greencoat steel sheet of 0.6 mm rust-protected Nordic quality steel, painted with bio-based paint. The door panel is filled with high density foam, which provides very good insulation.

The door is built entirely according to customer specifications and has the highest quality with a very long operating life cycle. The investment cost might be higher than its competitors, but over time, a Torverk door will likely be the best economic alternative due to its thermal insulation with unique U- and T-values as well as the high quality of the door leading to a very low operating cost - with a superior operating life cycle.

Thermal insulation capacity: U-value 0.85 W / m2 / K according to EN12489.
Air permeability: class 5 (the highest defined class) according to EN12426.
Water penetration: class 3, which is the highest class according to EN12425.
Wind load resistance: class 5, (corresponding to hurricane) according to EN12424.
Q-Door in certain configurations meets the safety rating SK2 (SSF 1074).

PRODUCT STANDARDS

EN 12489 Industrial, commercial and garage doors and gates - Resistance to water penetration - Test method
EN 12426 Industrial, commercial and garage doors and gates - Air permeability
EN 12425 Industrial, commercial and garage doors and gates - Resistance to water penetration - Classification
EN 12424 Industrial, commercial and garage doors and gates - Resistance to wind load

Further information can be found at www.torverk.se.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	80,9	Sweden/Europe/USA
Minerals	1,29	Sweden
Fossil materials	17,8	Sweden/Europe

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	1.43

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m^2 of an electrically operated industrial folding door, with/without pedestrian door and/or window.
Mass per declared unit	25.8 kg
Reference service life	30 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	x	x	MND	MND	MND	MND	MND	x	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	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 manufacturing processes and packaging of the finalized industrial door takes place in Torsby, Sweden.

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.

All transports from the production site in Torsby are based on a contract with a distribution company and carried out by lorry. The majority of the vehicles meet the requirements of Euroclass 6, therefore all domestic transports are based on this type of transportation. In those cases where mode of transport is unknown lorry of Euroclass 6 has been used for domestic transportation and Euroclass 5 have been used for transportation within the EU market. Where there was no information regarding transportation market data points have been used.

PRODUCT USE AND MAINTENANCE (B1-B7)

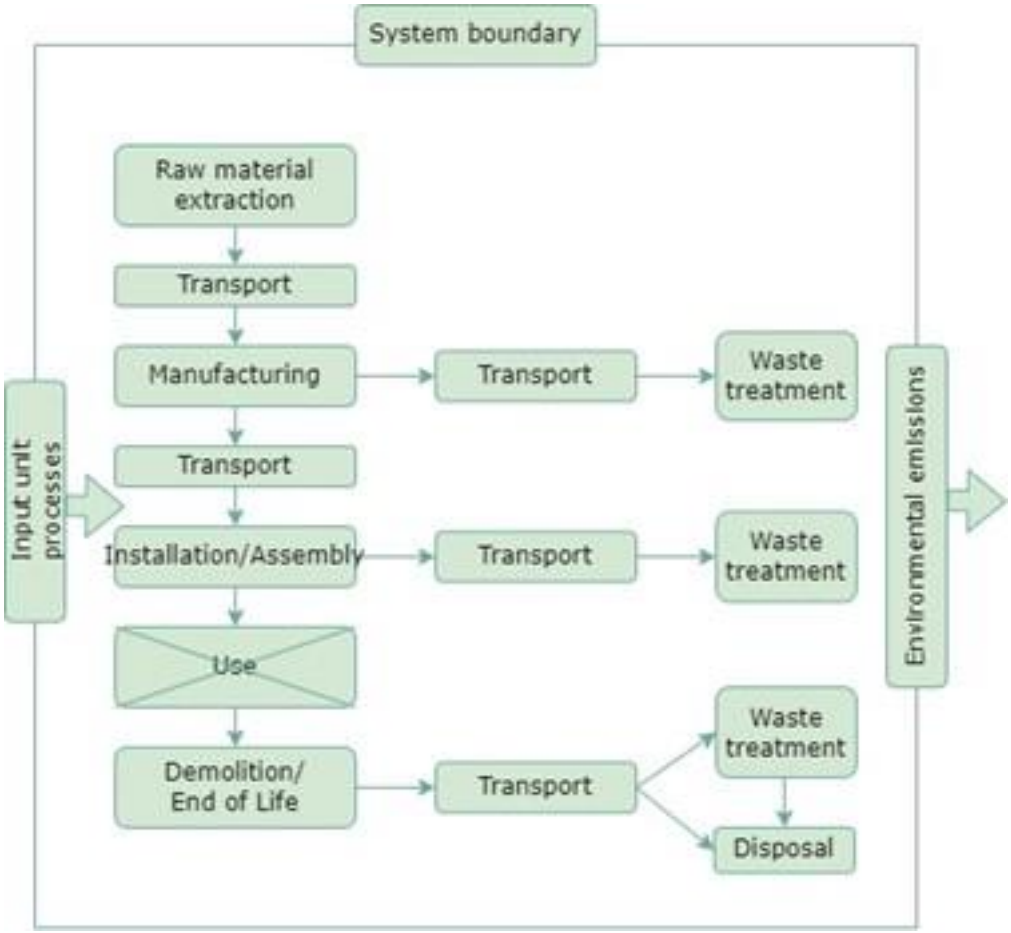
The electrically operated door requires electricity during its lifetime. Hinges and the like of the door are parts that greatly affects the lifetime of the door. These are strong and have low friction, which enables easy handling and opening/closing of the door and contributes to the low operational/maintenance requirements and long life time of the door.

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

PRODUCT END OF LIFE (C1-C4, D)

It is possible to re-use the product during the reference service life and it can be moved from one place to another. It does occur that products are replaced and resold on the secondary market. It is difficult to predict or assume to what extent this takes place, which is why it has not been accounted for in the EPD. The majority, by weight, of components is steel which can be recycled.

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.

The cut-off mass (which amounts to 2,21% of the total weight) is not adjusted for according to mass as it is assumed to have negligible impact. The energy usage during installation and demolition is cut-off as this energy is assumed to be negligible.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per the reference standard, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

Data on energy consumption includes the total energy usage in the production facility, including not only the production related activities but also the office energy consumption. There is no way of separating the data for each activity, hence all of the energy consumption is allocated to manufacturing. Allocation is based on annual production rate.

Manufacturing ancillary materials and fuels for manufacturing equipment is assumed negligible.

The end-of-life products are assumed to be sent to the closest facilities. Transportation distance to the closest disposal area is assumed to be 100 km and the mode of transport is assumed to be lorry.

In the end-of-life stage, since the consumption of energy and natural resources is negligible for disassembling of the end-of-life product, the impacts of demolition are assumed zero (C1).

Furthermore, in the end-of-life scenario, steel is assumed to be material recycled to 97%, 2% is assumed to be energy recovered and 1% is disposed of in landfill. In the calculations of this EPD 3% is assumed to go to landfill, as a conservative approach and due to inefficient energy recovery from steel.

The end-of-life scenario for glass is assumed to be material recycling to an extent of 80%. The rest (20%) is assumed to go to landfill.

The end-of-life scenario for the electrical component (motor) is based on the material, which is aluminium, steel, and copper (material recycling), plastics (energy recovery) and other which is electronics scrap (landfill).

The incineration of the municipal solid waste (which is the assumed end-of-life scenario of the plastic and rubber) is assumed to have an efficiency of 90% of which 40% is electricity generation and 50% is heat generation. The benefits of energy recycling through incineration are combined (electricity and heat) in one datapoint for each material.

Allocation used in Ecoinvent 3.6 environmental data sources follows the

methodology ‘allocation, cut-off by classification’. This methodology is in line with the requirements of the EN 15804 -standard.

Allocation used in environmental data sources is aligned with the above.

AVERAGES AND VARIABILITY

The EPD present the data of a product which is an average of QF4 plain, QF4 GDR, QF4 ZZ with an added motor unit. The variation for the three designs (where the plain design was considered the baseline and the two others required more input material and hence resulted in higher GWP-fossil indicators) was 25%. This is mainly due to the increased material requirements as well as the increased production losses for the design with a pedestrian door. All other inputs are identical, and all manufacturing processes are the same for the different designs. The motor is declared per m2 as its values are divides by 16 since the calculations are based on a typical industrial door with the dimensions of 4x4 meters.

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	kg CO_2e	5,71E1	3,35E0	-2,09E0	5,83E1	6,34E0	5,63E0	MND	MND	MND	MND	MND	1,07E1	MND	0E0	2,25E-1	7,43E0	4,1E-3	-1,87E1
GWP – fossil	kg CO_2e	5,73E1	3,35E0	3,58E0	6,42E1	6,4E0	2,7E-1	MND	MND	MND	MND	MND	9,66E0	MND	0E0	2,25E-1	7,46E0	4,1E-3	-2,35E1
GWP – biogenic	kg CO_2e	-2,72E-1	-4,61E-3	-5,8E0	-6,08E0	2,93E-3	5,36E0	MND	MND	MND	MND	MND	3,9E-1	MND	0E0	1,7E-4	-3,19E-2	5,52E-6	4,84E0
GWP – LULUC	kg CO_2e	7,02E-2	1,58E-3	1,34E-1	2,06E-1	3,59E-3	6,86E-5	MND	MND	MND	MND	MND	6,52E-1	MND	0E0	7,05E-5	1,21E-3	1,7E-6	-2,4E-2
Ozone depletion pot.	kg $CFC_{-11}e$	1,84E-5	7,27E-7	1,05E-6	2,02E-5	1,37E-6	4,26E-9	MND	MND	MND	MND	MND	4,89E-6	MND	0E0	5,52E-8	1,59E-7	1,54E-9	-1,51E-6
Acidification potential	mol H^+e	3,35E-1	1,32E-2	1,15E-2	3,59E-1	1,87E-2	2,32E-4	MND	MND	MND	MND	MND	4,61E-2	MND	0E0	7,22E-4	9,84E-3	3,72E-5	-1,56E-1
EP-freshwater[3)]	kg Pe	4,75E-3	4,05E-5	1,66E-4	4,96E-3	7,55E-5	3,1E-6	MND	MND	MND	MND	MND	7,22E-4	MND	0E0	1,91E-6	5,32E-5	6,19E-8	-1,81E-3
EP-marine	kg Ne	5,91E-2	3,8E-3	2,71E-3	6,57E-2	3,35E-3	5,12E-5	MND	MND	MND	MND	MND	1,02E-2	MND	0E0	1,59E-4	2,47E-3	1,26E-5	-2,89E-2
EP-terrestrial	mol Ne	6,71E-1	3,96E-2	3,39E-2	7,44E-1	3,77E-2	5,7E-4	MND	MND	MND	MND	MND	1,32E-1	MND	0E0	1,77E-3	2,79E-2	1,39E-4	-3,32E-1
POCP (“smog”)	kg NMVOCe	2,43E-1	1,21E-2	8,1E-3	2,63E-1	1,45E-2	1,48E-4	MND	MND	MND	MND	MND	2,92E-2	MND	0E0	6,94E-4	7,96E-3	4,01E-5	-1,54E-1
ADP-minerals & metals	kg Sbe	2,27E-2	1,05E-4	3,91E-5	2,28E-2	3,15E-4	4,7E-7	MND	MND	MND	MND	MND	1,62E-4	MND	0E0	4E-6	4,12E-5	4,6E-8	-6,29E-4
ADP-fossil resources	MJ	1,21E3	4,34E1	2,43E2	1,5E3	9,49E1	7,08E-1	MND	MND	MND	MND	MND	1,17E3	MND	0E0	3,65E0	1,79E1	1,08E-1	-3,13E2
Water use[2)]	m^3e depr.	1,68E1	2,06E-1	3,14E0	2,01E1	3,93E-1	1,89E-2	MND	MND	MND	MND	MND	1,5E1	MND	0E0	1,36E-2	4,07E-1	4,74E-3	-1,38E1

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	MJ	7,84E1	7,37E-1	1,2E2	1,99E2	2,03E0	1E-1	MND	MND	MND	MND	MND	5,64E2	MND	0E0	4,59E-2	1,63E0	1,29E-3	-2,88E1
Renew. PER as material	MJ	1,75E-4	0E0	6,11E1	6,11E1	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	7,84E1	7,37E-1	1,81E2	2,6E2	2,03E0	1E-1	MND	MND	MND	MND	MND	5,64E2	MND	0E0	4,59E-2	1,63E0	1,29E-3	-2,88E1
Non-re. PER as energy	MJ	1,18E3	4,34E1	2,43E2	1,46E3	9,49E1	7,08E-1	MND	MND	MND	MND	MND	1,17E3	MND	0E0	3,65E0	1,79E1	1,08E-1	-3,13E2
Non-re. PER as material	MJ	4,98E1	0E0	0E0	4,98E1	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,23E3	4,34E1	2,43E2	1,51E3	9,49E1	7,08E-1	MND	MND	MND	MND	MND	1,17E3	MND	0E0	3,65E0	1,79E1	1,08E-1	-3,13E2
Secondary materials	kg	3,75E0	0E0	1E-1	3,85E0	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	1,13E1
Renew. secondary fuels	MJ	3,43E-4	0E0	0E0	3,43E-4	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	8,86E0	0E0	0E0	8,86E0	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	3,99E1	7,54E-3	6,53E-2	4E1	1,73E-2	5,88E-4	MND	MND	MND	MND	MND	3,05E-1	MND	0E0	7,59E-4	1,44E-2	1,12E-4	-2,05E-1

6) 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	5,05E0	5,11E-2	2,14E-1	5,32E0	1,36E-1	5,47E-3	MND	MND	MND	MND	MND	8,81E-1	MND	0E0	3,54E-3	0E0	1,23E-4	-1,1E1
Non-hazardous waste	kg	1,43E2	2,83E0	6,18E0	1,52E2	5,93E0	2,35E-1	MND	MND	MND	MND	MND	2,55E1	MND	0E0	3,92E-1	0E0	6,86E-1	-9,24E1
Radioactive waste	kg	8,39E-3	2,94E-4	3,38E-3	1,21E-2	6,31E-4	4,43E-6	MND	MND	MND	MND	MND	1,65E-2	MND	0E0	2,5E-5	0E0	6,98E-7	-1,26E-4

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	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	5,74E-3	0E0	0E0	5,74E-3	0E0	0E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	2,04E1	0E0	0E0
Materials for energy rec	kg	5,75E-4	0E0	0E0	5,75E-4	0E0	2,57E0	MND	MND	MND	MND	MND	0E0	MND	0E0	0E0	4,66E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	0E0	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_2e	8,29E1	2,88E0	3,68E0	8,95E1	6,34E0	2,69E-1	MND	MND	MND	MND	MND	1,02E1	MND	0E0	2,23E-1	7,43E0	4,02E-3	-2,22E1
Ozone depletion Pot.	kg $CFC_{-11}e$	4,22E-6	5,13E-7	1,65E-6	6,38E-6	1,1E-6	4,45E-9	MND	MND	MND	MND	MND	7,91E-6	MND	0E0	4,38E-8	1,37E-7	1,23E-9	-1,26E-6
Acidification	kg SO_2e	3,38E-1	6,02E-3	8,5E-3	3,52E-1	1,4E-2	1,87E-4	MND	MND	MND	MND	MND	3,49E-2	MND	0E0	4,77E-4	6,28E-3	1,65E-5	-1,26E-1
Eutrophication	kg PO_4^3e	1,27E-1	1,32E-3	4,96E-3	1,33E-1	3,36E-3	1,28E-4	MND	MND	MND	MND	MND	2,11E-2	MND	0E0	9,64E-5	4,13E-3	3,56E-6	-8,24E-2
POCP (“smog”)	kg C_2H_4e	3,15E-2	3,81E-4	4,18E-4	3,23E-2	8,4E-4	7,2E-6	MND	MND	MND	MND	MND	1,57E-3	MND	0E0	2,75E-5	3,68E-4	1,13E-6	-1,94E-2
ADP-elements	kg Sbe	2,27E-2	1,05E-4	3,91E-5	2,28E-2	3,15E-4	4,7E-7	MND	MND	MND	MND	MND	1,62E-4	MND	0E0	4E-6	4,12E-5	4,6E-8	-6,29E-4
ADP-fossil	MJ	1,21E3	4,34E1	2,43E2	1,5E3	9,49E1	7,08E-1	MND	MND	MND	MND	MND	1,17E3	MND	0E0	3,65E0	1,79E1	1,08E-1	-3,13E2

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 ED 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, approved verifier by EPD Hub, 13.04.2022