

# ENVIRONMENTAL PRODUCT DECLARATION

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

## GEOTEC Steel Combination Bolt

Dextra Building Products (Guangdong) Co., Ltd.



EPD HUB, HUB-1342

Published on 26.04.2024, last updated on 26.04.2024, valid until 26.04.2029.

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Dextra Building Products (Guangdong) Co., Ltd.
Address	No. 54 Xinyao bei Road, Xintang Town, Zengcheng District, Guangzhou 511340 China
Contact details	group.dbpg@dextragroup.com
Website	www.dextragroup.com

### 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	Wilairat Jeamad
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> 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	GEOTEC Steel Combination Bolt
Additional labels	-
Product reference	-
Place of production	China
Period for data	2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton
Declared unit mass	1000 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	2,58E+03
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	2,58E+03
Secondary material, inputs (%)	21.3
Secondary material, outputs (%)	64.7
Total energy use, A1-A3 (kWh)	7990
Total water use, A1-A3 (m <sup>3</sup> e)	22.6

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Dextra specializes in the design, manufacturing, and distribution of engineered construction solutions.

Dextra business lines include:

- Products for the reinforcement concrete, for both civil and nuclear applications,
- Engineered bar systems (tie bars, tension rods, post-tensioning bars)
- Rock and soil anchors used in various applications such as geotechnical works.

Overall, Dextra provides a complete solution, encompassing engineering, manufacturing, and product delivery, including specialized equipment like bar-end preparation machines.

### PRODUCT DESCRIPTION

Dextra GEOTEC Steel Combination Bolt is a mechanical bolt that includes a corrugated pipe, allowing a double grout layer along the tendon suitable for the most stringent requirements. It provides both, high bonding and protection against corrosion, similar to Double Corrosion Protection system. It is installed for immediate support of rock, anchored by an expansion shell, to be fully grouted at a later stage, allowing it to be classified as permanent support. The advantage is that a single bolt is effective for immediate work protection at the face after torque tensioning, while later gaining additional corrosion protection by the grouting. Installation of such can be mechanized and automatized using add-on equipment onto the drilling jumbos.

Dextra GEOTEC Steel Combination Bolt are therefore highly attractive for very corrosive environments like subsea tunnels, but are also commonly used in all kind of mined tunnels & caverns where safety and high productivity are the key requirements.

Further information can be found at <https://www.dextragroup.com/>.

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	China
Minerals	-	-
Fossil materials	-	-
Bio-based materials	-	-

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.0147
Biogenic carbon content in packaging, kg C	0.000305

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 ton
Mass per declared unit	1000 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		
x	x	x	x	x	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	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 production, as well as packaging materials and other ancillary materials. This stage also includes fuels used by machines and the handling of waste formed during production processes at manufacturing facilities. The study also takes into account material losses occurring during manufacturing processes, as well as losses during electricity transmission.

The GEOTECH Steel Combination Bolt consists of several steel components as rebar, expansion shell, corrugate pipe, grouting head & tube, washer, and nuts. The components used in an assembly can vary depending on the application. The raw materials are produced in China and delivered to the manufacturers site in China, where they are cut and machined to form the final shapes and sizes. The manufacturing process requires electricity to

power the production equipment. The product is then packed with plastic bag, tape, tarpaulin, with label, and placed in wooden boxes equipped with attachment elements.

During the manufacturing processes (cutting, stamping and machining), approximately 2% of the steel materials are lost. Additionally, there are also wastes from ancillary materials, including its packaging such as oil drums and buckets. All steel waste is transferred to a recycling company, and hazardous liquid wastes from ancillary materials are sent for incineration for proper disposal.

### 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 average distance of transportation from the production plant to the customers sites is calculated to be 11,726 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 1 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. To be conservative, empty returns are included in this study, implemented through an average load factor in the Ecoinvent transport datapoints. Additionally, transportation does not result in losses as the product is properly packaged.

At the project site, a Drill Rig is assumed to be the equipment used for the installation of the product. The installation time for one assembly is estimated to be an hour.

Environmental impacts stemming from the installation of products into the building include the generation of waste packaging materials (A5) and the release of biogenic carbon dioxide from wooden pallets and boxes.

The waste from packaging materials consists of plastic, steel, and wooden waste. Treatment of plastic waste at the project site is assumed to be 50%

landfill, 19% incineration, 9% recycling, and 22% mismanagement, according to OECD report 2019. For steel waste, it is assumed to be 85% recycling and 15% landfill, as per World Steel Association 2020 report. Wood waste is assumed to be untreated. The transportation distances to the waste treatment plant are assumed to be 25 km for mismanagement, 50 km for landfill, 100 km for incineration, and 150 km for recycling plants.

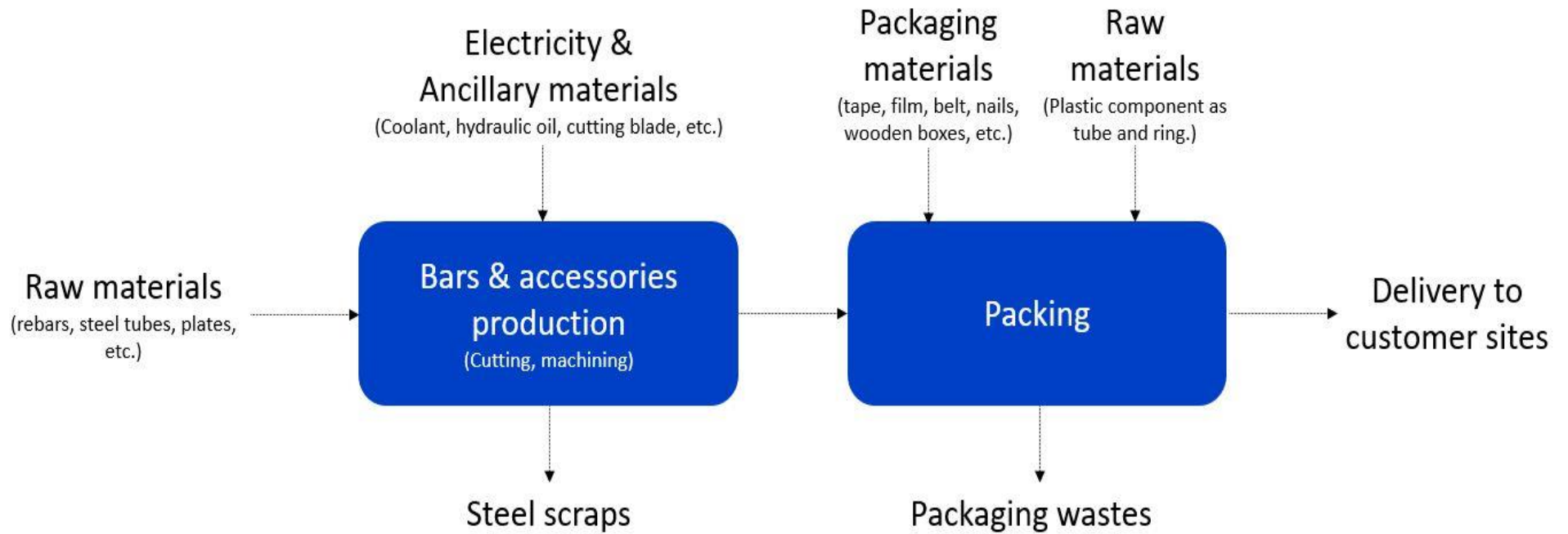
### **PRODUCT USE AND MAINTENANCE (B1-B7)**

The use phase is not included in the assessment as it is not relevant for the product. Air, soil, and water impacts during the use phase have not been studied.

### **PRODUCT END OF LIFE (C1-C4, D)**

The disassembly of the product is assumed to be conducted using a Drill Rig over a period of an hour. It is assumed that different waste materials will be collected separately and transported to a waste treatment facility. Treatment of waste at the project site is assumed to be the same as mentioned in the section Transport and installation (A4-A5). Transportation distances to waste treatment plants are assumed to be 25 km for mismanagement, 50 km for landfill, 100 km for incineration, and 150 km for recycling plants, with transportation conducted by lorry (C2). Module C3 encompasses energy and resource inputs for sorting and treating materials for recycling, while landfilled and incinerated materials are addressed in Module C4. The products material recovery potential, as well as that of its packaging, contributes to the avoidance of virgin material production. Module D encompasses the benefits and burdens from incineration and recycling.

# 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.

### 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	Partly allocated by mass or volume
Packaging materials	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	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	- %

The variations in shapes and sizes of the steel components do not lead to variations in environmental impacts for one ton of the product.

### 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 <sup>1)</sup>	kg CO <sub>2</sub> e	2,55E+03	2,62E+01	5,70E+00	2,58E+03	1,15E+02	2,34E+02	MND	MND	MND	MND	MND	MND	MND	2,32E+02	2,37E+01	2,21E+01	1,78E+01	-7,47E+02
GWP – fossil	kg CO <sub>2</sub> e	2,55E+03	2,62E+01	5,70E+00	2,58E+03	1,14E+02	2,33E+02	MND	MND	MND	MND	MND	MND	MND	2,32E+02	2,37E+01	2,21E+01	1,78E+01	-7,47E+02
GWP – biogenic	kg CO <sub>2</sub> e	0,00E+00	1,97E-04	-1,11E-03	-9,18E-04	0,00E+00	-7,54E-04	MND	MND	MND	MND	MND	MND	MND	-1,11E-16	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO <sub>2</sub> e	1,70E+00	1,07E-02	8,08E-04	1,71E+00	8,23E-02	4,86E-01	MND	MND	MND	MND	MND	MND	MND	4,86E-01	9,67E-03	2,88E-02	9,34E-04	4,13E-01
Ozone depletion pot.	kg CFC <sub>11</sub> e	1,15E-04	5,76E-06	1,18E-07	1,21E-04	2,28E-05	7,82E-06	MND	MND	MND	MND	MND	MND	MND	7,81E-06	5,23E-06	2,36E-06	3,76E-07	-2,06E-05
Acidification potential	mol H <sup>+</sup> e	1,08E+01	1,08E-01	5,44E-02	1,10E+01	3,61E+00	1,18E+00	MND	MND	MND	MND	MND	MND	MND	1,18E+00	9,81E-02	2,52E-01	1,07E-02	-2,97E+00
EP-freshwater <sup>2)</sup>	kg Pe	1,04E-01	2,21E-04	3,23E-04	1,05E-01	4,26E-04	1,21E-02	MND	MND	MND	MND	MND	MND	MND	1,21E-02	2,00E-04	9,57E-04	1,22E-05	-2,45E-03
EP-marine	kg Ne	2,16E+00	3,16E-02	6,91E-03	2,20E+00	8,89E-01	1,99E-01	MND	MND	MND	MND	MND	MND	MND	1,99E-01	2,86E-02	5,35E-02	4,54E-03	-8,64E-02
EP-terrestrial	mol Ne	2,44E+01	3,48E-01	7,95E-02	2,49E+01	9,88E+00	2,22E+00	MND	MND	MND	MND	MND	MND	MND	2,21E+00	3,16E-01	6,16E-01	4,32E-02	-7,73E+00
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	1,12E+01	1,06E-01	2,13E-02	1,13E+01	2,56E+00	5,99E-01	MND	MND	MND	MND	MND	MND	MND	5,98E-01	9,62E-02	1,69E-01	1,27E-02	-4,21E+00
ADP-minerals & metals <sup>4)</sup>	kg Sbe	3,30E-02	9,14E-05	5,86E-06	3,31E-02	1,66E-04	1,08E-03	MND	MND	MND	MND	MND	MND	MND	1,08E-03	8,25E-05	2,51E-03	2,76E-06	-2,19E-02
ADP-fossil resources	MJ	2,70E+04	3,79E+02	1,52E+01	2,74E+04	1,44E+03	3,01E+03	MND	MND	MND	MND	MND	MND	MND	3,01E+03	3,43E+02	2,63E+02	2,64E+01	-5,82E+03
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	1,01E+03	1,66E+00	2,67E+00	1,01E+03	4,36E+00	6,34E+01	MND	MND	MND	MND	MND	MND	MND	6,34E+01	1,50E+00	4,50E+00	5,00E-01	2,63E+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 PO<sub>4</sub>e; 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	1,98E-04	2,22E-06	1,02E-07	2,00E-04	3,76E-06	8,95E-06	MND	MND	MND	MND	MND	MND	MND	8,93E-06	2,02E-06	3,51E-06	1,87E-07	-3,79E-05
Ionizing radiation <sup>6)</sup>	kBq U235e	8,63E+01	1,76E+00	3,23E-01	8,84E+01	6,64E+00	3,38E+01	MND	MND	MND	MND	MND	MND	MND	3,38E+01	1,59E+00	1,58E+00	1,17E-01	2,50E+01
Ecotoxicity (freshwater)	CTUe	7,88E+04	3,49E+02	6,77E+01	7,92E+04	9,30E+02	4,57E+03	MND	MND	MND	MND	MND	MND	MND	4,57E+03	3,16E+02	1,24E+03	2,22E+01	-1,91E+04
Human toxicity, cancer	CTUh	1,45E-05	9,82E-09	1,42E-09	1,45E-05	6,78E-08	7,00E-08	MND	MND	MND	MND	MND	MND	MND	6,98E-08	8,88E-09	3,77E-08	9,71E-10	7,03E-06
Human tox. non-cancer	CTUh	5,66E-05	3,25E-07	3,74E-08	5,69E-05	6,10E-07	2,58E-06	MND	MND	MND	MND	MND	MND	MND	2,58E-06	2,94E-07	1,59E-06	3,08E-08	4,29E-05
SQP <sup>7)</sup>	-	8,45E+03	2,62E+02	1,07E+01	8,72E+03	2,29E+02	4,90E+02	MND	MND	MND	MND	MND	MND	MND	4,89E+02	2,38E+02	5,25E+02	5,55E+01	-2,80E+03

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 <sup>8)</sup>	MJ	2,40E+03	4,45E+00	8,75E+00	2,42E+03	1,02E+01	3,91E+02	MND	MND	MND	MND	MND	MND	MND	3,91E+02	4,02E+00	4,05E+01	2,77E-01	-8,19E+02
Renew. PER as material	MJ	0,00E+00	0,00E+00	8,97E-05	8,97E-05	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
Total use of renew. PER	MJ	2,40E+03	4,45E+00	8,75E+00	2,42E+03	1,02E+01	3,91E+02	MND	MND	MND	MND	MND	MND	MND	3,91E+02	4,02E+00	4,05E+01	2,77E-01	-8,19E+02
Non-re. PER as energy	MJ	2,59E+04	3,79E+02	6,56E+01	2,64E+04	1,44E+03	3,01E+03	MND	MND	MND	MND	MND	MND	MND	3,01E+03	3,43E+02	2,63E+02	2,64E+01	-5,83E+03
Non-re. PER as material	MJ	0,00E+00	0,00E+00	4,50E+00	4,50E+00	0,00E+00	-4,50E+00	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	2,59E+04	3,79E+02	7,01E+01	2,64E+04	1,44E+03	3,01E+03	MND	MND	MND	MND	MND	MND	MND	3,01E+03	3,43E+02	2,63E+02	2,64E+01	-5,83E+03
Secondary materials	kg	2,13E+02	1,25E-01	1,22E-02	2,13E+02	6,53E-01	2,79E-01	MND	MND	MND	MND	MND	MND	MND	2,77E-01	1,13E-01	2,88E-01	7,85E-03	4,86E+02
Renew. secondary fuels	MJ	5,50E-01	1,62E-03	1,72E-03	5,53E-01	1,93E-03	1,94E-03	MND	MND	MND	MND	MND	MND	MND	1,93E-03	1,46E-03	1,44E-02	1,71E-04	-1,16E-01
Non-ren. secondary fuels	MJ	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
Use of net fresh water	m <sup>3</sup>	2,25E+01	4,48E-02	2,92E-02	2,26E+01	9,50E-02	1,77E+00	MND	MND	MND	MND	MND	MND	MND	1,77E+00	4,05E-02	1,28E-01	2,83E-02	-1,98E+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	9,99E+02	5,46E-01	3,65E-01	1,00E+03	1,98E+00	1,95E+01	MND	MND	MND	MND	MND	MND	MND	1,95E+01	4,94E-01	2,04E+00	0,00E+00	-4,33E+02
Non-hazardous waste	kg	4,23E+03	8,72E+00	1,35E+01	4,25E+03	1,67E+01	5,24E+02	MND	MND	MND	MND	MND	MND	MND	5,22E+02	7,89E+00	5,13E+01	1,73E+02	-1,23E+03
Radioactive waste	kg	4,33E-02	2,50E-03	1,33E-04	4,59E-02	1,02E-02	9,30E-03	MND	MND	MND	MND	MND	MND	MND	9,30E-03	2,27E-03	1,16E-03	0,00E+00	4,69E-03

### 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	0,00E+00	0,00E+00	5,41E-01	5,41E-01	0,00E+00	2,70E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,52E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	1,53E-03	1,53E-03	0,00E+00	5,00E-01	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	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

### 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 <sub>2</sub> e	2,44E+03	2,59E+01	5,66E+00	2,47E+03	1,14E+02	2,28E+02	MND	MND	MND	MND	MND	MND	MND	2,27E+02	2,35E+01	2,17E+01	1,72E+01	-6,91E+02
Ozone depletion Pot.	kg CFC-11e	1,15E-04	4,57E-06	9,57E-08	1,19E-04	1,80E-05	6,54E-06	MND	MND	MND	MND	MND	MND	MND	6,53E-06	4,14E-06	1,90E-06	2,99E-07	-2,93E-05
Acidification	kg SO <sub>2</sub> e	8,84E+00	8,44E-02	4,74E-02	8,97E+00	2,89E+00	9,82E-01	MND	MND	MND	MND	MND	MND	MND	9,82E-01	7,65E-02	2,03E-01	7,96E-03	-2,38E+00
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	4,44E+00	1,94E-02	1,16E-02	4,48E+00	3,23E-01	4,42E-01	MND	MND	MND	MND	MND	MND	MND	4,26E-01	1,75E-02	6,56E-02	1,59E-01	-1,07E+00
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	1,15E+00	3,43E-03	1,66E-03	1,15E+00	7,44E-02	3,94E-02	MND	MND	MND	MND	MND	MND	MND	3,93E-02	3,11E-03	7,79E-03	6,62E-04	-5,48E-01
ADP-elements	kg Sbe	3,28E-02	8,92E-05	1,59E-05	3,29E-02	1,63E-04	1,08E-03	MND	MND	MND	MND	MND	MND	MND	1,08E-03	8,05E-05	2,51E-03	2,65E-06	-2,18E-02
ADP-fossil	MJ	2,70E+04	3,79E+02	7,01E+01	2,74E+04	1,44E+03	3,01E+03	MND	MND	MND	MND	MND	MND	MND	3,01E+03	3,43E+02	2,63E+02	2,64E+01	-5,82E+03

## 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  
26.04.2024

