ENVIRONMENTAL PRODUCT DECLARATION

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

Tension Rods

Dextra Manufacturing Co., Ltd.

EPD HUB, HUB-1648

Published on 15 July 2024, last updated on 15 July 2024, valid until 15 July 2029.

Created with One Click LCA

Dextra

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Dextra Manufacturing Co., Ltd.
Address	191 Chalermprakiet Rama 9 Alley, 48 Alley, Dokmai Sub-District, Prawet District, Bangkok
Contact details	thailand@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	Tanyarade Nateweera
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Haiha Nguyen, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Tension Rods
Additional labels	-
Product reference	-
Place of production	Thailand
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 (kgCO2e)	2,89E+03
GWP-total, A1-A3 (kgCO2e)	2,89E+03
Secondary material, inputs (%)	38.4
Secondary material, outputs (%)	55.3
Total energy use, A1-A3 (kWh)	9620
Net fresh water use, A1-A3 (m3)	17.3

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

Tension rods typically serve as bracing or suspension elements and offer benefits such as high strength, length adjustability, ease of installation, and the ability to be post-tensioned after installation. They consist of a high-tensile steel bar along with accessories such as couplers, turnbuckles, forks, pins, and lock covers, available in a wide range of sizes and various steel grades.

Further information can be found at www.dextragroup.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	99.93	China
Minerals	-	-
Fossil materials	0.067	Thailand, China
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	
Biogenic carbon content in packaging, kg C	0.0082

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 tension rods system consists of various steel components such as bars, couplers, turnbuckles, forks, pins, washers, nuts, and lock covers. 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 Thailand, 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 tapes, plastic film, PU foam, and placed in wooden boxes equipped with attachment elements.

During the manufacturing processes (cutting, machining, and threading) 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 4,437 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, an electric tower crane is assumed to be the equipment used for the installation of the product. The installation time for one assembly is estimated to be 8 hours.

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.

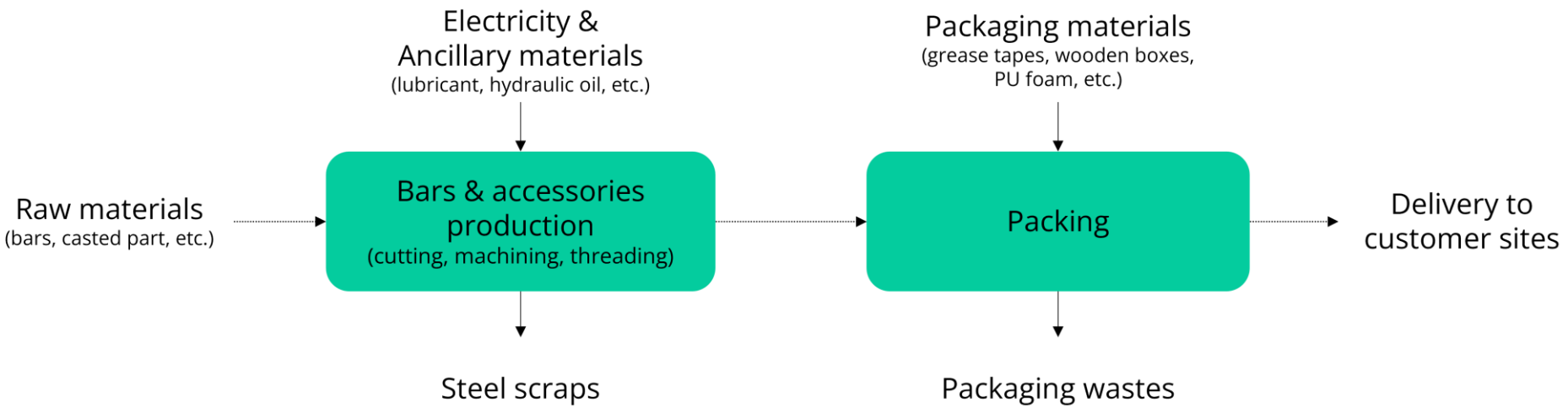
PRODUCT USE AND MAINTENANCE (B1-B7)

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 an electric tower crane over a period of 8 hours. It is assumed that different waste materials will be collected separately and transported to a waste treatment facility. Treatment of plastic waste at the project site is assumed to consist of 50% landfill, 19% incineration, 9% recycling, and 22% mismanagement, according to OECD report 2019. Steel waste is assumed to undergo 85% recycling and 15% landfill, as per World Steel Association report 2020. Wood waste is assumed to be untreated. 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 product's 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 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	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[1)]	kg CO_2e	2,53E+03	7,39E+01	2,86E+02	2,89E+03	5,35E+01	3,93E+02	MND	MND	MND	MND	MND	MND	MND	3,93E+02	2,35E+01	2,19E+01	7,91E-01	-3,22E+02
GWP – fossil	kg CO_2e	2,53E+03	7,39E+01	2,86E+02	2,89E+03	5,35E+01	3,93E+02	MND	MND	MND	MND	MND	MND	MND	3,92E+02	2,34E+01	2,19E+01	7,90E-01	-3,22E+02
GWP – biogenic	kg CO_2e	1,34E-01	0,00E+00	-3,33E-02	1,01E-01	0,00E+00	3,33E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	2,17E+00	4,24E-02	1,39E-02	2,23E+00	3,76E-02	8,24E-01	MND	MND	MND	MND	MND	MND	MND	8,24E-01	9,56E-03	2,86E-02	7,46E-04	5,73E-01
Ozone depletion pot.	kg CFC_{-11}e	1,22E-04	1,55E-05	2,34E-05	1,61E-04	1,07E-05	1,32E-05	MND	MND	MND	MND	MND	MND	MND	1,32E-05	5,17E-06	2,35E-06	3,20E-07	-3,44E-06
Acidification potential	mol H^+e	1,32E+01	1,48E+00	1,60E+00	1,63E+01	1,43E+00	2,00E+00	MND	MND	MND	MND	MND	MND	MND	2,00E+00	9,70E-02	2,51E-01	7,43E-03	-6,04E-01
EP-freshwater[2)]	kg Pe	1,15E-01	4,39E-04	5,62E-05	1,16E-01	2,81E-04	2,06E-02	MND	MND	MND	MND	MND	MND	MND	2,06E-02	1,98E-04	9,53E-04	8,28E-06	8,36E-03
EP-marine	kg Ne	2,43E+00	3,96E-01	2,90E-01	3,12E+00	3,59E-01	3,37E-01	MND	MND	MND	MND	MND	MND	MND	3,37E-01	2,83E-02	5,33E-02	2,57E-03	1,98E-01
EP-terrestrial	mol Ne	3,40E+01	4,39E+00	3,96E+00	4,24E+01	3,99E+00	3,75E+00	MND	MND	MND	MND	MND	MND	MND	3,75E+00	3,12E-01	6,14E-01	2,83E-02	-2,88E+00
POCP ("smog")[3)]	kg NMVOCe	1,04E+01	1,15E+00	8,80E-01	1,24E+01	1,04E+00	1,01E+00	MND	MND	MND	MND	MND	MND	MND	1,01E+00	9,51E-02	1,69E-01	8,23E-03	-2,36E+00
ADP-minerals & metals[4)]	kg Sbe	3,60E-02	1,78E-04	6,71E-05	3,62E-02	1,29E-04	1,84E-03	MND	MND	MND	MND	MND	MND	MND	1,84E-03	8,15E-05	2,51E-03	1,82E-06	1,54E-03
ADP-fossil resources	MJ	2,70E+04	1,00E+03	4,83E+01	2,80E+04	6,90E+02	5,11E+03	MND	MND	MND	MND	MND	MND	MND	5,10E+03	3,39E+02	2,62E+02	2,17E+01	-1,69E+03
Water use[5)]	m^3e depr.	1,08E+03	3,70E+00	3,48E+01	1,11E+03	2,49E+00	1,07E+02	MND	MND	MND	MND	MND	MND	MND	1,07E+02	1,49E+00	4,46E+00	6,87E-02	2,70E+02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	2,22E-04	5,35E-06	4,11E-06	2,32E-04	2,31E-06	1,51E-05	MND	MND	MND	MND	MND	MND	MND	1,51E-05	2,00E-06	3,42E-06	1,50E-07	-4,30E-06
Ionizing radiation[6)]	kBq U235e	1,23E+02	4,63E+00	8,72E-01	1,28E+02	3,18E+00	5,72E+01	MND	MND	MND	MND	MND	MND	MND	5,72E+01	1,58E+00	1,57E+00	9,80E-02	3,62E+01
Ecotoxicity (freshwater)	CTUe	9,18E+04	7,84E+02	2,12E+03	9,47E+04	5,09E+02	7,75E+03	MND	MND	MND	MND	MND	MND	MND	7,75E+03	3,13E+02	1,23E+03	1,41E+01	-3,18E+03
Human toxicity, cancer	CTUh	1,90E-05	4,46E-08	2,80E-08	1,91E-05	3,32E-08	1,18E-07	MND	MND	MND	MND	MND	MND	MND	1,18E-07	8,78E-09	3,67E-08	3,53E-10	7,06E-06
Human tox. non-cancer	CTUh	7,73E-05	7,38E-07	1,22E-06	7,92E-05	3,88E-07	4,37E-06	MND	MND	MND	MND	MND	MND	MND	4,37E-06	2,91E-07	1,59E-06	9,24E-09	4,14E-05
SQP[7)]	-	8,40E+03	4,26E+02	1,86E+02	9,02E+03	1,54E+02	8,28E+02	MND	MND	MND	MND	MND	MND	MND	8,28E+02	2,35E+02	5,23E+02	4,63E+01	-2,07E+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	2,56E+03	9,38E+00	1,32E+02	2,70E+03	6,35E+00	6,63E+02	MND	MND	MND	MND	MND	MND	MND	6,63E+02	3,98E+00	4,04E+01	1,88E-01	3,39E+02
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,66E-01	2,66E-01	0,00E+00	-2,66E-01	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	2,56E+03	9,38E+00	1,32E+02	2,71E+03	6,35E+00	6,63E+02	MND	MND	MND	MND	MND	MND	MND	6,63E+02	3,98E+00	4,04E+01	1,88E-01	3,39E+02
Non-re. PER as energy	MJ	2,70E+04	1,00E+03	3,95E+03	3,19E+04	6,90E+02	5,11E+03	MND	MND	MND	MND	MND	MND	MND	5,11E+03	3,39E+02	2,62E+02	2,17E+01	-1,70E+03
Non-re. PER as material	MJ	6,27E-03	0,00E+00	1,01E+00	1,02E+00	0,00E+00	-1,01E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-6,27E-03	0,00E+00
Total use of non-re. PER	MJ	2,70E+04	1,00E+03	3,95E+03	3,19E+04	6,90E+02	5,10E+03	MND	MND	MND	MND	MND	MND	MND	5,11E+03	3,39E+02	2,62E+02	2,17E+01	-1,70E+03
Secondary materials	kg	3,84E+02	3,89E-01	2,75E-02	3,85E+02	3,24E-01	4,70E-01	MND	MND	MND	MND	MND	MND	MND	4,70E-01	1,12E-01	2,81E-01	4,55E-03	3,52E+02
Renew. secondary fuels	MJ	2,77E-01	2,80E-03	5,68E-04	2,80E-01	1,87E-03	3,27E-03	MND	MND	MND	MND	MND	MND	MND	3,27E-03	1,45E-03	1,43E-02	1,19E-04	2,49E-02
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^3	1,68E+01	9,20E-02	3,67E-01	1,73E+01	5,73E-02	3,01E+00	MND	MND	MND	MND	MND	MND	MND	3,01E+00	4,01E-02	1,27E-01	2,37E-02	-1,32E+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	9,64E+02	1,40E+00	6,53E+00	9,72E+02	1,05E+00	3,30E+01	MND	MND	MND	MND	MND	MND	MND	3,30E+01	4,88E-01	2,02E+00	0,00E+00	2,40E+01
Non-hazardous waste	kg	4,48E+03	1,73E+01	2,46E+02	4,75E+03	1,10E+01	8,85E+02	MND	MND	MND	MND	MND	MND	MND	8,85E+02	7,80E+00	5,11E+01	1,50E+02	-3,99E+02
Radioactive waste	kg	5,35E-02	6,84E-03	1,07E-03	6,14E-02	4,76E-03	1,58E-02	MND	MND	MND	MND	MND	MND	MND	1,58E-02	2,24E-03	1,16E-03	0,00E+00	1,04E-02

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	2,00E+01	2,00E+01	0,00E+00	4,70E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,50E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	5,21E-01	5,21E-01	0,00E+00	3,39E-02	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_2e	2,45E+03	7,33E+01	2,85E+02	2,80E+03	5,31E+01	3,84E+02	MND	MND	MND	MND	MND	MND	MND	3,84E+02	2,32E+01	2,15E+01	7,74E-01	-2,85E+02
Ozone depletion Pot.	kg CFC_{-11}e	1,18E-04	1,23E-05	1,80E-05	1,48E-04	8,47E-06	1,11E-05	MND	MND	MND	MND	MND	MND	MND	1,11E-05	4,10E-06	1,90E-06	2,53E-07	-1,21E-05
Acidification	kg SO_2e	1,02E+01	1,17E+00	1,25E+00	1,26E+01	1,14E+00	1,66E+00	MND	MND	MND	MND	MND	MND	MND	1,66E+00	7,56E-02	2,03E-01	5,61E-03	-4,26E-01
Eutrophication	kg PO_4^3e	4,90E+00	1,53E-01	2,84E-01	5,34E+00	1,34E-01	7,23E-01	MND	MND	MND	MND	MND	MND	MND	7,22E-01	1,73E-02	6,31E-02	1,21E-03	-2,76E-01
POCP (“smog”)	kg C_2H_4e	1,02E+00	3,08E-02	4,84E-02	1,10E+00	2,96E-02	6,67E-02	MND	MND	MND	MND	MND	MND	MND	6,67E-02	3,07E-03	7,71E-03	2,35E-04	-3,52E-01
ADP-elements	kg Sbe	3,57E-02	1,74E-04	3,75E-04	3,63E-02	1,27E-04	1,83E-03	MND	MND	MND	MND	MND	MND	MND	1,83E-03	7,96E-05	2,51E-03	1,79E-06	1,51E-03
ADP-fossil	MJ	2,70E+04	1,00E+03	3,97E+03	3,19E+04	6,90E+02	5,10E+03	MND	MND	MND	MND	MND	MND	MND	5,10E+03	3,39E+02	2,62E+02	2,17E+01	-1,69E+03

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	2,53E+03	7,39E+01	2,86E+02	2,89E+03	5,35E+01	3,93E+02	MND	MND	MND	MND	MND	MND	MND	3,92E+02	2,34E+01	2,19E+01	7,90E-01	-3,22E+02

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
15.07.2024

VERIFIED ISO 14025