



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Reinforcing Bar / Coil
NatSteel Holdings Pte Ltd



EPD HUB, HUB-3525

Publishing date 28 June 2025, last updated on 28 June 2025, valid until 27 June 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



GENERAL INFORMATION

MANUFACTURER

Manufacturer	NatSteel Holdings Pte Ltd
Address	22 Tanjong Kling Road, Singapore 628048
Contact details	sales@natsteel.com.sg
Website	https://www.natsteel.com.sg

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
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	Darren Chua
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	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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.

PRODUCT

Product name	Reinforcing Bar / Coil
Additional labels	-
Product reference	-
Place(s) of raw material origin	China
Place of production	Singapore
Place(s) of installation and use	Singapore
Period for data	Calendar Year 2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	<10
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	68,9

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 ton of Reinforcement Bar / Coil
Declared unit mass	1000 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	4,76E+02
GWP-total, A1-A3 (kgCO ₂ e)	4,77E+02
Secondary material, inputs (%)	106
Secondary material, outputs (%)	99,2
Total energy use, A1-A3 (kWh)	1950
Net freshwater use, A1-A3 (m ³)	1,3

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Established in 1961, NatSteel is a leading steel manufacturer in Southeast Asia, delivering high-quality steel products and reinforcement solutions for the construction industry. Its core offerings—rebar, welded mesh, and prefabricated steel components—are widely used in buildings, infrastructure projects such as Changi Airport and the MRT, as well as various industrial applications across the region.

NatSteel's steel reinforcing bar and coil products, including rebar, wire rod, and hot-rolled DBIC, are manufactured to meet rigorous international and regional standards, including:

- Singapore Standards Council SS 560:2016
- Malaysian Standard MS 146:2014
- Indian Standard IS 1786:2008
- Australian/New Zealand Standard AS/NZS 4671:2019

These certifications reflect NatSteel's strong commitment to product quality, safety, and regulatory compliance across its key markets. NatSteel is also among the few companies in Singapore to have received the prestigious 4 ticks under the Singapore Green Building Product certification —testament to its efforts in promoting green practices and reducing environmental impact. Additionally, the company has been recognized with the Work-Life Excellence Award for four consecutive years, reinforcing its reputation as one of Singapore's top employers for work-life harmony.

PRODUCT DESCRIPTION

This EPD covers three reinforcement-grade steel products manufactured by NatSteel:

- Reinforcement Bars (Grade 500 and Grade 600),
- Wire Rod, and
- Deformed Bar in Coil (DBIC)

Reinforcement Bars

Reinforcement Bars are deformed steel bars produced to provide a solid foundation for buildings that can withstand the test of time of up to 300 years, providing tensile load enhancement to concrete's material weakness in tension. There are several uses for Reinforcement Bars, they can be divided into Primary and Secondary Reinforcement. Primary Reinforcement refers to the employment of steel to guarantee resistance to support design loads, whereas Secondary Reinforcement refers to the employment of steel to provide localised resistance to limit cracking and resistance stress from temperature changes and shrinkage. In addition to Primary and Secondary Reinforcement, Reinforcement Bars are employed to confer resistance to concentrated loads by providing localised resistance and stiffness to allow the load to spread through a wider area, and to hold other steel bars in its position to accommodate their loads. With the characteristics of Reinforcement Bars, you will typically find them in structural elements such as Bored Piles, Pile Caps, Columns, Beams, Slab, and Walls. NatSteel produce two variants of Reinforcement Bars; Grade 500 and Grade 600. The former provides a yield strength of 500 Mpa, and the latter provides a yield strength of 600 Mpa. With Grade 600 Reinforcement Bars, contractors benefit from an overall cost and time reduction from material reduction, manpower reduction, and construction time, whilst generating a lower carbon footprint compared to the same work carried out with Grade 500 Reinforcement Bars.

Wire Rod

Wire Rod is semi-finished plain bar in coil form of diameter ranging from 5.5-13mm. It is used to fabricate welded wire mesh for reinforcing monolithic structures of concrete floors and screeds, as well as ligatures for reinforcement steel cages.

Deformed Bar in Coil (DBIC)

Deformed Bar in Coil (DBIC) is produced via the same process as Wire Rod and hence is similar in terms of being in coil form, but its surface finishing is

deformed and diameter ranges from 8-16mm. It carries the same specifications and usage applications as reinforcement bars. DBIC is used to fabricate Cut-And-Bend (CAB) products as well as linkages for Bore Pile Cages. DBIC provides benefits of reduced material wastage in the fabrication process due to the continuous length nature of the coiled bar.

These products are produced at the same facility using a shared rolling mill. As such, a single EPD is developed for all three product types. The environmental impacts are based on a production-weighted average, with allocation by mass according to the annual production volumes of each product.

materials, energy, emissions, and waste are proportionally allocated to the three products based on their respective production shares.

The EPD includes the life cycle stages from raw material extraction through manufacturing (Modules A1–A3), end-of-life (Modules C1–C4), and potential benefits and burdens beyond the system boundary such as scrap recycling (Module D). The end-of-life stage assumes typical deconstruction, transport, recycling, and disposal scenarios relevant to reinforced concrete applications.

While minor variations may exist between individual product grades (e.g., Grade 500 vs Grade 600) and forms (e.g., straight bar vs coil), this EPD represents the average environmental performance of NatSteel's reinforcement-grade steel portfolio. It is intended for use in sustainability assessments of buildings and infrastructure that use steel reinforcement.

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

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	-
Biogenic carbon content in packaging, kg C	-

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 ton of Reinforcement Bar / Coil
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	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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The Steelmaking facility operate an Electric Arc Furnace (EAF) by which steel production occurs by charging 100 percent steel scrap. The scrap is preheated and melted in the EAF. Molten steel is then refined and alloyed in a ladle furnace (LF) to the desired grade and then transferred to a caster to be continuously casted into 165mm x 165mm x 9.5m billets.

These billets are then shipped to a facility in Singapore where they are charged into the reheating furnace of a Bar & Wire mill to be hot-rolled into various grades of steel reinforcement bars and wire-rods. Reinforcement bars and wire rod may be further processed into cold drawn wire coils, prefabricated cut and bend products, MESH, prefabricate bore pile and caging products.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

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.

Not Included

PRODUCT USE AND MAINTENANCE (B1-B7)

Not Included

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

PRODUCT END OF LIFE (C1-C4, D)

C1 – Deconstruction/Demolition

It is assumed that 0.01 kWh of electricity is consumed per kilogram of steel during the mechanical demolition and separation of reinforcement bars from concrete structures, using typical building machinery. No additional emissions are modeled from auxiliary equipment.

C2 – Transport to Waste Processing

End-of-life reinforcement steel is assumed to be transported an average of 20 km to the waste processing facility using a Euro 5 truck with a payload of >32 tonnes. Load efficiency and return trips are modeled in accordance with ecoinvent defaults.

C3 – Waste Processing for Recycling

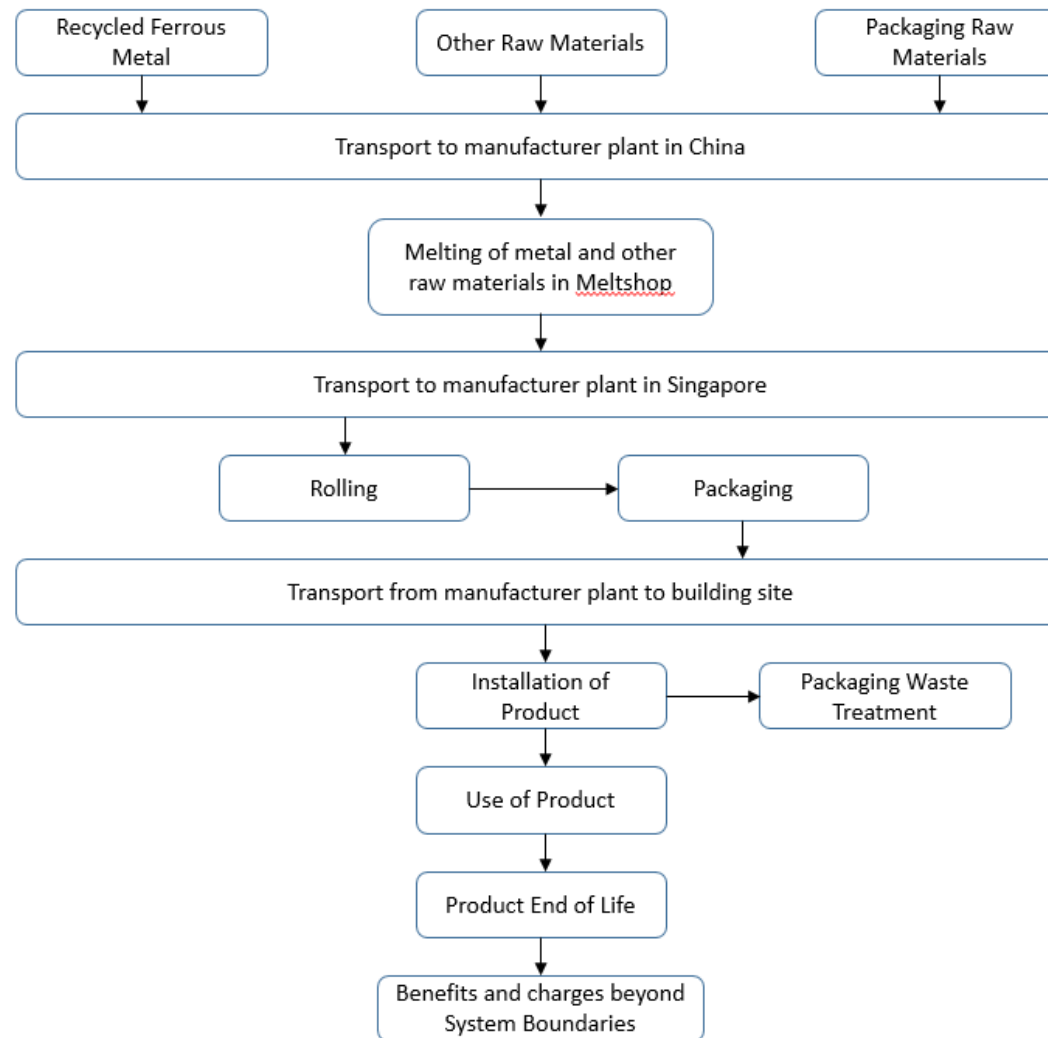
99% of the steel is assumed to be recovered and sent for recycling with minimal sorting or cutting. No additional emissions or burdens are modeled in this stage, as the recycling process is excluded from the system boundary and not credited in Module D.

C4 – Disposal

The remaining 1% of the steel is assumed to be sent to landfill, with disposal emissions modeled using the ecoinvent dataset for inert material landfilling.

These assumptions reflect typical industry practices and infrastructure relevant to construction and demolition waste management in developed urban contexts. As the steel input is predominantly recycled, no Module D benefits are claimed to avoid double-counting per EN 15804+A2 and EPD Hub GPI guidelines.

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 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.

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	Allocated by mass or volume
Packaging material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	<10

This EPD is based on the averaging of 3 products - Reinforced Bar (Rebar), Wire Rods and Deformed Bar in Coil. Since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation.

According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total raw materials, energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the product output fixed to 1 ton and the corresponding amount of product is used in the calculations.

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	7,61E+01	1,03E+02	2,97E+02	4,77E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,61E+00	2,18E+00	2,70E+01	6,25E-02	0,00E+00
GWP – fossil	kg CO ₂ e	7,60E+01	1,03E+02	2,97E+02	4,76E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,60E+00	2,18E+00	2,70E+01	6,24E-02	0,00E+00
GWP – biogenic	kg CO ₂ e	5,24E-02	1,85E-02	1,13E-01	1,84E-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
GWP – LULUC	kg CO ₂ e	3,42E-02	5,28E-02	1,27E-01	2,14E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,69E-04	9,75E-04	3,17E-02	3,57E-05	0,00E+00
Ozone depletion pot.	kg CFC-11e	2,02E-07	1,50E-06	3,78E-06	5,48E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,52E-08	3,22E-08	2,90E-07	1,81E-09	0,00E+00
Acidification potential	mol H ⁺ e	7,61E-01	2,17E+00	2,18E+00	5,12E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,25E-02	7,43E-03	2,88E-01	4,43E-04	0,00E+00
EP-freshwater ²⁾	kg Pe	2,98E+00	4,79E-03	5,82E-02	3,04E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,04E-04	1,70E-04	1,46E-02	5,13E-06	0,00E+00
EP-marine	kg Ne	1,05E-01	5,49E-01	3,53E-01	1,01E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,51E-02	2,44E-03	6,41E-02	1,69E-04	0,00E+00
EP-terrestrial	mol Ne	1,15E+00	6,09E+00	3,71E+00	1,10E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,65E-01	2,66E-02	7,22E-01	1,84E-03	0,00E+00
POCP (“smog”) ³⁾	kg NMVOCe	3,55E-01	1,71E+00	1,39E+00	3,45E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,93E-02	1,09E-02	2,13E-01	6,60E-04	0,00E+00
ADP-minerals & metals ⁴⁾	kg Sbe	1,80E-04	1,61E-04	2,26E-03	2,60E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,29E-06	6,08E-06	1,59E-03	9,92E-08	0,00E+00
ADP-fossil resources	MJ	1,47E+03	1,34E+03	4,08E+03	6,89E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E+01	3,16E+01	3,18E+02	1,53E+00	0,00E+00
Water use ⁵⁾	m ³ e depr.	7,65E+00	4,78E+00	3,62E+01	4,86E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,18E-01	1,56E-01	5,04E+00	4,42E-03	0,00E+00

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

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	8,12E-06	5,39E-06	2,02E-03	2,03E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,25E-07	2,18E-07	4,03E-06	1,01E-08	0,00E+00
Ionizing radiation ⁶⁾	kBq 11235e	1,43E+00	8,06E-01	5,85E+00	8,09E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,09E-02	2,75E-02	1,14E+00	9,63E-04	0,00E+00
Ecotoxicity (freshwater)	CTUe	3,91E+02	1,31E+02	8,66E+02	1,39E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,60E+00	4,47E+00	1,85E+02	1,29E-01	0,00E+00
Human toxicity, cancer	CTUh	8,83E-06	2,04E-08	7,83E-08	8,93E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,71E-10	3,60E-10	2,16E-08	1,15E-11	0,00E+00
Human tox. non-cancer	CTUh	8,83E-06	5,21E-07	2,83E-06	1,22E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,87E-09	2,05E-08	1,38E-06	2,64E-10	0,00E+00
SQP ⁷⁾	-	2,52E+02	5,53E+02	9,65E+02	1,77E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,30E+00	3,18E+01	6,03E+02	3,02E+00	0,00E+00

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	1,09E+02	1,32E+01	1,39E+03	1,51E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,99E-01	4,33E-01	4,94E+01	1,48E-02	0,00E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	2,02E-06	2,02E-06	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	1,09E+02	1,32E+01	1,39E+03	1,51E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,99E-01	4,33E-01	4,94E+01	1,48E-02	0,00E+00
Non-re. PER as energy	MJ	9,17E+02	1,34E+03	3,24E+03	5,50E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E+01	3,16E+01	3,18E+02	1,53E+00	0,00E+00
Non-re. PER as material	MJ	5,19E+02	0,00E+00	0,00E+00	5,19E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-5,14E+02	-5,19E+00	0,00E+00
Total use of non-re. PER	MJ	1,44E+03	1,34E+03	3,24E+03	6,02E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E+01	3,16E+01	-1,96E+02	-3,66E+00	0,00E+00
Secondary materials	kg	1,06E+03	6,15E-01	3,44E+00	1,07E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,96E-02	1,35E-02	3,68E-01	3,85E-04	0,00E+00
Renew. secondary fuels	MJ	5,26E-03	3,50E-03	1,46E-02	2,34E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,12E-05	1,71E-04	1,67E-02	7,97E-06	0,00E+00
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	m³	1,97E-01	1,30E-01	9,76E-01	1,30E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,12E-03	4,67E-03	1,39E-01	1,59E-03	0,00E+00

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	4,97E+01	1,95E+00	2,28E+01	7,44E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,25E-02	5,36E-02	2,48E+00	1,69E-03	0,00E+00
Non-hazardous waste	kg	1,42E+02	3,05E+01	2,99E+02	4,71E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,15E-01	9,91E-01	6,98E+01	3,87E-02	0,00E+00
Radioactive waste	kg	5,10E-04	1,97E-04	1,46E-03	2,17E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,12E-06	6,74E-06	2,81E-04	2,35E-07	0,00E+00

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	1,42E+02	1,42E+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
Materials for recycling	kg	0,00E+00	0,00E+00	9,60E-01	9,60E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	9,92E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	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	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 ₂ e	7,55E+01	1,03E+02	2,95E+02	4,74E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,59E+00	2,17E+00	2,69E+01	6,19E-02	0,00E+00
Ozone depletion Pot.	kg CFC-11e	1,72E-07	1,19E-06	3,27E-06	4,63E-06	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,37E-08	2,57E-08	2,40E-07	1,44E-09	0,00E+00
Acidification	kg SO ₂ e	6,47E-01	1,73E+00	1,85E+00	4,22E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,29E-02	5,67E-03	2,32E-01	3,28E-04	0,00E+00
Eutrophication	kg PO ₄ ³ e	4,48E-02	2,02E-01	1,66E-01	4,12E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,34E-03	1,38E-03	3,30E-02	1,04E-04	0,00E+00
POCP (“smog”)	kg C ₂ H ₄ e	3,63E-02	8,92E-02	1,73E-01	2,98E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,71E-03	5,06E-04	1,37E-02	3,10E-05	0,00E+00
ADP-elements	kg Sbe	1,66E-04	1,58E-04	2,23E-03	2,56E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,26E-06	5,93E-06	1,58E-03	9,72E-08	0,00E+00
ADP-fossil	MJ	1,44E+03	1,33E+03	3,99E+03	6,76E+03	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,68E+01	3,12E+01	3,00E+02	1,52E+00	0,00E+00

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 ₂ e	7,60E+01	1,03E+02	2,97E+02	4,76E+02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,61E+00	2,18E+00	2,70E+01	6,25E-02	0,00E+00

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.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Southwest China National Grid, Singapore National Grid
Electricity CO2e / kWh	0,361
District heating data source and quality	-
District heating CO2e / kWh	-

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	141,5
Collection process – kg collected with mixed waste	1002
Recovery process – kg for re-use	141,5
Recovery process – kg for recycling	992
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	10
Scenario assumptions e.g. transportation	Transported 500km (for Reuse) and 20km (for recycling or landfill) by lorry

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 González Vázquez, as an authorized verifier acting for EPD Hub Limited
28.06.2025

