

# ENVIRONMENTAL PRODUCT DECLARATION

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

Cable Tray Systems

Voestalpine Metsec PLC Cable Management



**EPD HUB, HUB-0690**

Publishing date 8 September 2023, last updated date 8 September 2023, valid until 8 September 2028

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Voestalpine Metsec PLC
Address	Broadwell Road, Middlesbrough, UK
Contact details	metsec.cablemanagement@voestalpine.com
Website	www.metsec.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 1.0, 1 Feb 2022
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	Alan Harris
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <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	Voestalpine Metsec PLC Cable management - Cable Tray Systems
Additional labels	Pre-Galvanized and Hot Dip Galvanized Cable Tray Systems from 12mm to 50mm deep and 50mm to 900mm wide. All with a wide range of accessories.
Product reference	Pre-Galvanized and Hot Dip Galvanized Cable Tray Systems from 12mm to 50mm deep and 50mm to 900mm wide. All with a wide range of accessories.
Place of production	United Kingdom
Period for data	2021
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	N/A

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	3,31E0
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	3,3E0
Secondary material, inputs (%)	13,6
Secondary material, outputs (%)	85,0
Total energy use, A1-A3 (kWh)	11,7
Total water use, A1-A3 (m <sup>3</sup> e)	8,81E-2

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Voestalpine Metsec PLC is a cold roll forming company for the construction industry. Cold roll forming consists of gradually and continuously forming a steel profile.

The roll forming process involves a steel strip passing through rolls, each varying in shapes and numbers based on the complexity of the desired steel profile, to progressively transform it to make it into its final shape.

Additional processes such as punching, stamping, logo printing, embossing, in-line high frequency welding, in-line piercing and cut to length options can be completed reducing the need for secondary processing.

Metsec can tailor make profiles manufactured from steel, stainless steel and pre-painted material.

Voestalpine Metsec PLC has been manufacturing from its site in Oldbury since 1931. In 1998 the company was acquired by voestalpine becoming voestalpine Metsec PLC and the company went from strength to strength following inward investment in machinery and new facilities.

Metsec's parent company voestalpine AG is a leading European manufacturer with steel making facilities and headquarters in Austria.

The group has 500 locations in 50 countries on all 5 continents. Metsec is part of voestalpine's metal forming division (tubes and sections), a leading global provider of high-quality metal processing solutions, particularly special tubes and sections, special strip steel and complex components for the automotive and many other industries.

Here at voestalpine Metsec PLC our core values are to provide solutions to

suit a wide range of construction and manufacturing applications; with high quality, value added, technical experience and excellent customer service.

Our 5 Divisions include:

- Cable Management
- Custom Roll Forming
- Dry Lining
- Purlins
- Framing (Metframe & SFS)

We understand the importance of working at the forefront of the industry and how being compliant with the latest standards is key. For this we are proud to have a large number of accreditations for sustainability, BIM and quality.

We proactively invest in new technology to ensure the evolving expectations of our customers continue to be met or exceeded. We do this using our own software including MetSPEC. This software is available to download from our website for free.

### PRODUCT DESCRIPTION

Voestalpine Metsec PLC cable tray systems are mechanical support systems with the main function of providing a rigid structural system for electrical cables. The cable tray range covers product from 12mm to 50mm deep and 50mm to 900mm wide, all supported with a wide range of accessories including bends, reducers, risers, tees, crossovers and covers, all of which are manufactured inhouse and are covered within the scope of this EPD.

Materials and finishes available include mild steel pre galvanized (DX51D+Z275 NA-C) in accordance with BS EN 10346 as standard, or mild steel DC01 to BS EN 10130 which is hot dip galvanized after manufacture

with a coating thickness of 45 microns to BS EN ISO 1461. Product thicknesses range from 0.7 mm to 2.0 mm.

Voestalpine Metsec PLC Cable Trays conform to BS EN 61537 “Cable management– cable tray systems and cable ladder systems”.

The Cable Management Systems are independently tested and are covered by a British Standards Institute Kitemark (KM 635696) and conformance is further confirmed by independent testing.

Voestalpine Metsec PLC are approved suppliers for its cable management systems by TFL (Transport for London) for use and installation within London Underground. voestalpine Metsec holds registration numbers 1702 to 1705 (inclusive).

A full design service for the cable management range ensures the most cost-effective solution is specified. CAD drawings can also be produced if required. Bespoke systems can be manufactured to order with prototypes produced quickly for sample approval.

Metsec Cable Management offers comprehensive stocks and very high on-time and in full delivery performance.

Voestalpine Metsec cable management products can be purchased through any of our international, national, regional & local distributors, stockists and wholesalers. For your nearest stockist, please contact: voestalpine Metsec Cable Management Division – sales office on +44 (0) 121 601 6085.

For technical enquiries Please contact Metsec Cable Management on:

Tel: +44 (0) 121 601 6030

Email: [Metsec.CMDTechnical@voestalpine.com](mailto:Metsec.CMDTechnical@voestalpine.com)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	Asia and 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	0.0082

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Kg of Cable Tray
Mass per declared unit	1 kg
Functional unit	-
Reference service life	60 Years in C1 Environment

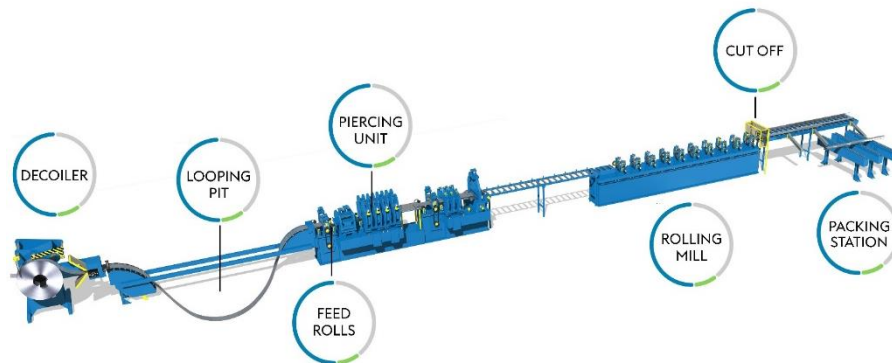
### SUBSTANCES, REACH - VERY HIGH CONCERN VP

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

## MANUFACTURING PROCESS

Cold roll forming is a reliable, proven approach to metal shaping that is ideal for modern applications. This process uses a continuous bending operation where coiled steel is passed through consecutive sets of profiled rolls. Each set of rolls performs incremental parts of a bend to produce the desired cross-section profile. Unlike other types of metal forming, the roll forming process is inherently flexible. Secondary processes can be integrated into a single production line. Roll forming increases efficiency while reducing operational and capital costs by eliminating unnecessary handling and equipment.

Metsec Cold roll forming mills can accommodate material gauges ranging from 0.5 mm up to 0.6.0 mm. The bend radius is largely determined by the ductility of the metal. However, 180-degree bends can be achieved with the right grade of material. Cold roll forming easily accommodates the integration of secondary operations such as welding, punching and precision laser cutting to optimize production efficiency.



# 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 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.

Roll Forming is the process of shaping strip metal by passing it through a series of specially designed shaped rolls, the process has high levels of repeatability and very tight tolerances. Profiles can be made from various metallic materials including steel, copper, aluminium, brass, stainless steel, coated Steels including zinc, paint and plastic. The roll forming process can manufacture typical shaped profiles such as channel, angles, boxes and round tube but is also able to form more complex profiles required for demanding technical solutions. The process is highly automated using modern control systems and can accommodate the piercing of holes and

bespoke cut to length requirements of the customer. The process includes fully integrated automated and semi-automated packaging reducing handling. The finished product is stored in warehouse facilities prior to shipment to the customer. The manufacturing process requires electricity and fuels for product movement and loading as well as heating. All waste produced at Metsec is sold for recycling or is shipped to energy recovery facilities. The loss of all material is considered within this EPD.

Plastic strapping and cardboard boxes are used for packaging and is required to ensure safe delivery of product to the customer.

## TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurs from delivery of the final product to construction site (A4) and covers fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Average distance of transportation from production plant to building site is assumed as 255.45 km and the transportation method is assumed to be lorry (urban curtain sided vehicle and articulated or rigid open backed vehicles - Euro 6+ compliant). Vehicle capacity utilization calculated by Metsec is 96% this is governed by the pack size and shape of product and is achieved by utilizing multiple deliveries on the same vehicle. No vehicle is dedicated to a single delivery unless the volume or quantity dictates. The vehicle utilization does vary but as role of transportation emissions in total results is small, the variety in load is assumed negligible. As the vehicles are dedicated for Metsec deliveries, the km figure calculated assumes the vehicle returns empty. Transportation does not cause losses as product is packaged to prevent damage. Module A5 data relating to packaging from the delivery of product is included, all packaging is assumed to be recycled. Data relating to installation is not included since voestalpine Metsec PLC do not have knowledge of how the installation is executed.

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

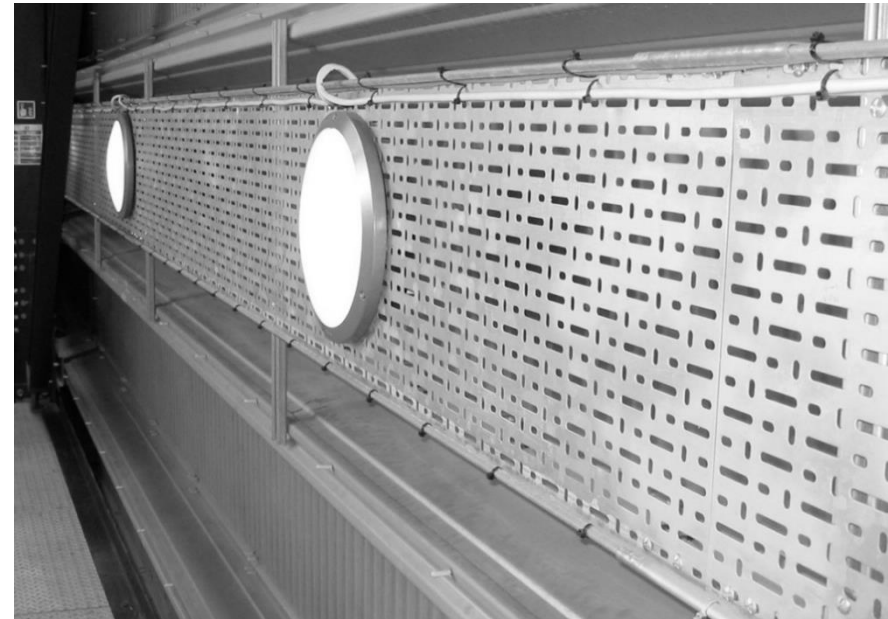
This EPD does not cover the use phase.

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

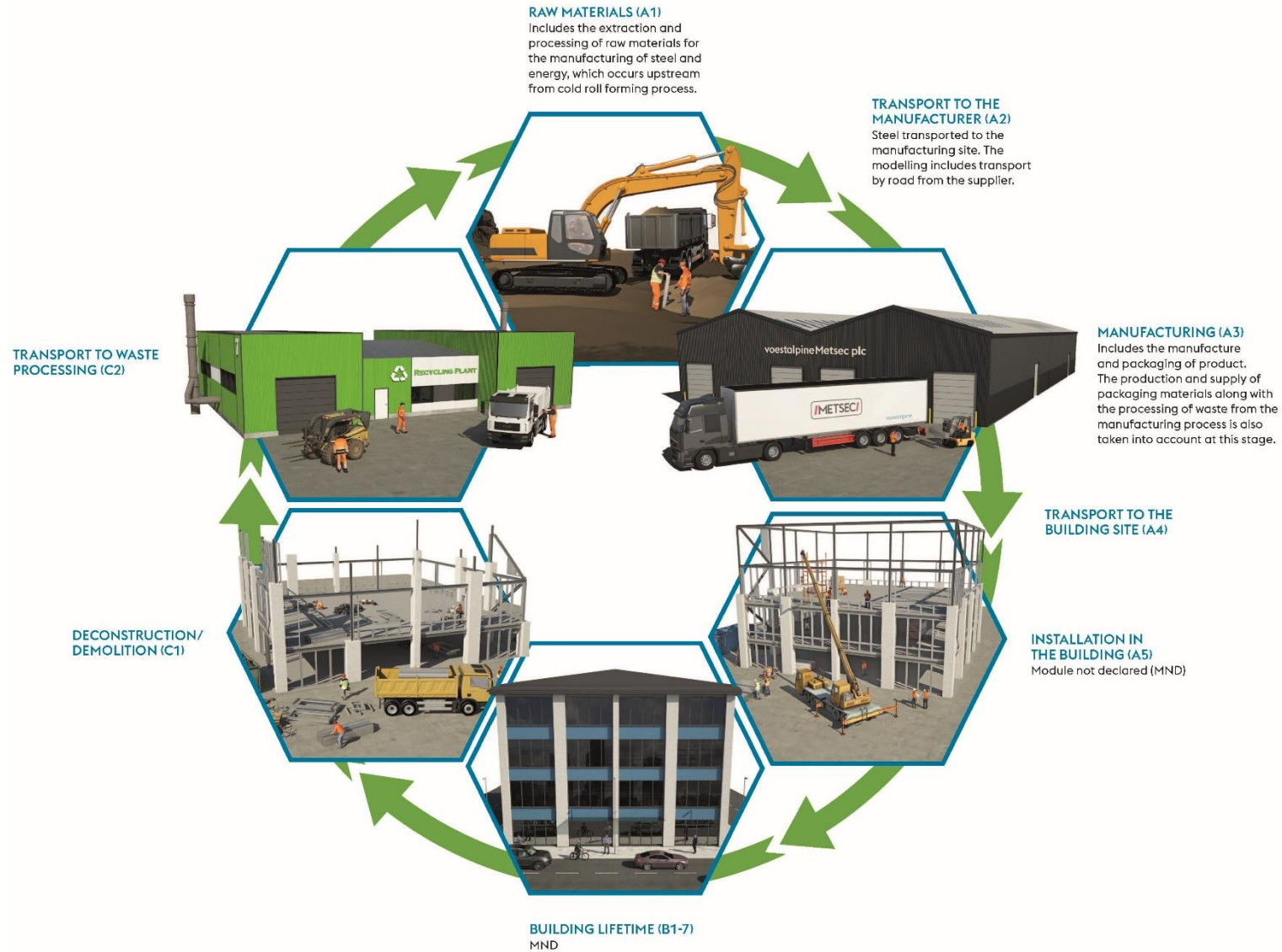
### PRODUCT END OF LIFE (C1-C4, D)

Demolition is assumed to consume 0,01 kWh/kg of product. The source of energy is diesel fuel used by construction machines (C1). It is assumed that 100% of the waste is collected and transported to the waste treatment centre. Transportation distance to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). Approximately 85% of steel is assumed to be recycled based on World Steel Association, 2020 (C3). It is assumed that the remaining 15 % of steel is taken to landfill for final disposal (C4). Due to the recycling process, the end-of-life product is converted into recycled steel (D).

This study claims the benefits and loads of recycling of packaging materials.



# PRODUCT LIFECYCLE





## 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	Not applicable

This EPD is product and factory specific and does not contain average 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. 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 <sup>1)</sup>	kg CO <sub>2</sub> e	3,16E0	9,65E-2	4,03E-2	3,3E0	2,35E-2	8,61E-3	MND	MND	MND	MND	MND	MND	MND	3,3E-3	8,17E-3	1,98E-2	7,92E-4	-8,42E-1
GWP – fossil	kg CO <sub>2</sub> e	3,15E0	9,64E-2	6,78E-2	3,31E0	2,34E-2	5,65E-4	MND	MND	MND	MND	MND	MND	MND	3,3E-3	8,17E-3	2,1E-2	7,9E-4	-8,68E-1
GWP – biogenic	kg CO <sub>2</sub> e	1,59E-2	-3,67E-5	-2,76E-2	-1,17E-2	1,7E-5	8,05E-3	MND	MND	MND	MND	MND	MND	MND	9,17E-7	4,39E-6	-1,2E-3	1,57E-6	2,59E-2
GWP – LULUC	kg CO <sub>2</sub> e	2,39E-3	7,65E-5	2,11E-5	2,49E-3	7,06E-6	5,12E-7	MND	MND	MND	MND	MND	MND	MND	2,79E-7	2,95E-6	2,38E-5	2,35E-7	2,29E-5
Ozone depletion pot.	kg CFC <sub>11</sub> e	1,73E-7	1,95E-8	7,12E-9	1,99E-7	5,51E-9	5,28E-11	MND	MND	MND	MND	MND	MND	MND	7,12E-10	1,86E-9	3,01E-9	3,25E-10	-2,31E-8
Acidification potential	mol H <sup>+</sup> e	7,19E-2	2,54E-3	1,52E-4	7,46E-2	9,85E-5	2,22E-6	MND	MND	MND	MND	MND	MND	MND	3,45E-5	2,34E-5	2,54E-4	7,5E-6	-3,35E-3
EP-freshwater <sup>2)</sup>	kg Pe	1,46E-4	5,3E-7	1,03E-6	1,47E-4	1,91E-7	1,55E-8	MND	MND	MND	MND	MND	MND	MND	1,33E-8	6,95E-8	1,45E-6	9,54E-9	-3,49E-5
EP-marine	kg Ne	4,68E-3	5,7E-4	3,72E-5	5,29E-3	2,97E-5	5,66E-7	MND	MND	MND	MND	MND	MND	MND	1,52E-5	4,66E-6	5,61E-5	2,58E-6	-6,59E-4
EP-terrestrial	mol Ne	2,89E-1	6,36E-3	4,1E-4	2,96E-1	3,28E-4	6,27E-6	MND	MND	MND	MND	MND	MND	MND	1,67E-4	5,2E-5	6,51E-4	2,84E-5	-6,98E-3
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	1,23E-2	1,68E-3	1,19E-4	1,41E-2	1,05E-4	1,9E-6	MND	MND	MND	MND	MND	MND	MND	4,59E-5	1,99E-5	1,78E-4	8,26E-6	-4,55E-3
ADP-minerals & metals <sup>4)</sup>	kg Sbe	9,17E-3	1,07E-6	3,16E-7	9,17E-3	4E-7	7,48E-9	MND	MND	MND	MND	MND	MND	MND	5,03E-9	2,25E-7	1,16E-6	7,22E-9	-8,77E-7
ADP-fossil resources	MJ	3,65E1	1,25E0	1,22E0	3,89E1	3,65E-1	6,65E-3	MND	MND	MND	MND	MND	MND	MND	4,54E-2	1,23E-1	2,91E-1	2,21E-2	-6,46E0
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	1,68E0	3,3E-3	5,23E-3	1,69E0	1,36E-3	8,79E-5	MND	MND	MND	MND	MND	MND	MND	8,46E-5	4,04E-4	4,13E-3	1,02E-3	-1,24E-1

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.

## 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	2,99E0	1,08E-2	3,94E-1	3,39E0	4,59E-3	1,77E-4	MND	MND	MND	MND	MND	MND	MND	2,45E-4	1,77E-3	4,56E-2	1,79E-4	8,32E-2
Renew. PER as material	MJ	0E0	0E0	2,44E-1	2,44E-1	0E0	-2,43E-1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,58E-3
Total use of renew. PER	MJ	2,99E0	1,08E-2	6,37E-1	3,64E0	4,59E-3	-2,43E-1	MND	MND	MND	MND	MND	MND	MND	2,45E-4	1,77E-3	4,56E-2	1,79E-4	8,68E-2
Non-re. PER as energy	MJ	3,65E1	1,25E0	1,18E0	3,89E1	3,65E-1	6,65E-3	MND	MND	MND	MND	MND	MND	MND	4,54E-2	1,23E-1	2,91E-1	2,21E-2	-6,42E0
Non-re. PER as material	MJ	0E0	0E0	3,89E-2	3,89E-2	0E0	-3,89E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	9,95E-4
Total use of non-re. PER	MJ	3,65E1	1,25E0	1,22E0	3,89E1	3,65E-1	-3,23E-2	MND	MND	MND	MND	MND	MND	MND	4,54E-2	1,23E-1	2,91E-1	2,21E-2	-6,42E0
Secondary materials	kg	1,36E-1	0E0	7,57E-6	1,36E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,95E-1
Renew. secondary fuels	MJ	3E-23	0E0	0E0	3E-23	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	3,53E-22	0E0	0E0	3,53E-22	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m <sup>3</sup>	6,5E-2	1,39E-4	2,29E-2	8,81E-2	7,59E-5	1,97E-6	MND	MND	MND	MND	MND	MND	MND	4,01E-6	2,13E-5	1,19E-4	2,42E-5	-5,76E-3

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	6,34E-1	1,65E-3	2,41E-3	6,38E-1	3,54E-4	3,23E-5	MND	MND	MND	MND	MND	MND	MND	4,88E-5	1,27E-4	0E0	2,06E-5	-1,04E-1
Non-hazardous waste	kg	9,45E0	2,99E-2	3,54E-2	9,52E0	3,92E-2	9,96E-4	MND	MND	MND	MND	MND	MND	MND	5,22E-4	8,75E-3	0E0	1,5E-1	-1,17E0
Radioactive waste	kg	7,16E-5	8,71E-6	4,08E-6	8,44E-5	2,5E-6	2,92E-8	MND	MND	MND	MND	MND	MND	MND	3,18E-7	8,46E-7	0E0	1,46E-7	4,66E-6

### 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	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	1,75E-2	1,75E-2	0E0	1,17E-2	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	8,5E-1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	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 <sub>2</sub> e	3,04E0	9,58E-2	6,67E-2	3,21E0	2,32E-2	5,54E-4	MND	MND	MND	MND	MND	MND	MND	3,27E-3	8,1E-3	2,06E-2	7,75E-4	-8,26E-1
Ozone depletion Pot.	kg CFC-11e	1,68E-7	1,54E-8	5,69E-9	1,89E-7	4,38E-9	4,44E-11	MND	MND	MND	MND	MND	MND	MND	5,63E-10	1,48E-9	2,56E-9	2,58E-10	-2,04E-8
Acidification	kg SO <sub>2</sub> e	2,2E-2	2,05E-3	1,22E-4	2,42E-2	4,77E-5	1,54E-6	MND	MND	MND	MND	MND	MND	MND	4,87E-6	1,65E-5	1,58E-4	3,13E-6	-2,63E-3
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	6,39E-3	2,14E-4	3,72E-5	6,64E-3	9,64E-6	1,03E-6	MND	MND	MND	MND	MND	MND	MND	8,57E-7	3,41E-6	6,45E-5	6,05E-7	-1,45E-3
POCP (“smog”)	kg C <sub>2</sub> H <sub>4</sub> e	1,35E-3	5,77E-5	6,99E-6	1,41E-3	3,02E-6	9,58E-8	MND	MND	MND	MND	MND	MND	MND	5,01E-7	9,86E-7	7,41E-6	2,29E-7	-6,79E-4
ADP-elements	kg Sbe	9,17E-3	1,07E-6	3,16E-7	9,17E-3	4E-7	7,48E-9	MND	MND	MND	MND	MND	MND	MND	5,03E-9	2,25E-7	1,16E-6	7,22E-9	-8,77E-7
ADP-fossil	MJ	3,65E1	1,25E0	1,22E0	3,89E1	3,65E-1	6,65E-3	MND	MND	MND	MND	MND	MND	MND	4,54E-2	1,23E-1	2,91E-1	2,21E-2	-6,46E0

## 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  
05.09.2023

