Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Ancon AMR Bed Joint Reinforcement

from

Leviat Ltd

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on the average results of the product group. Products covered by this EPD: AMR, AMR/CJ, AMR/X.
EPD registration number:	EPD-IES-0028551
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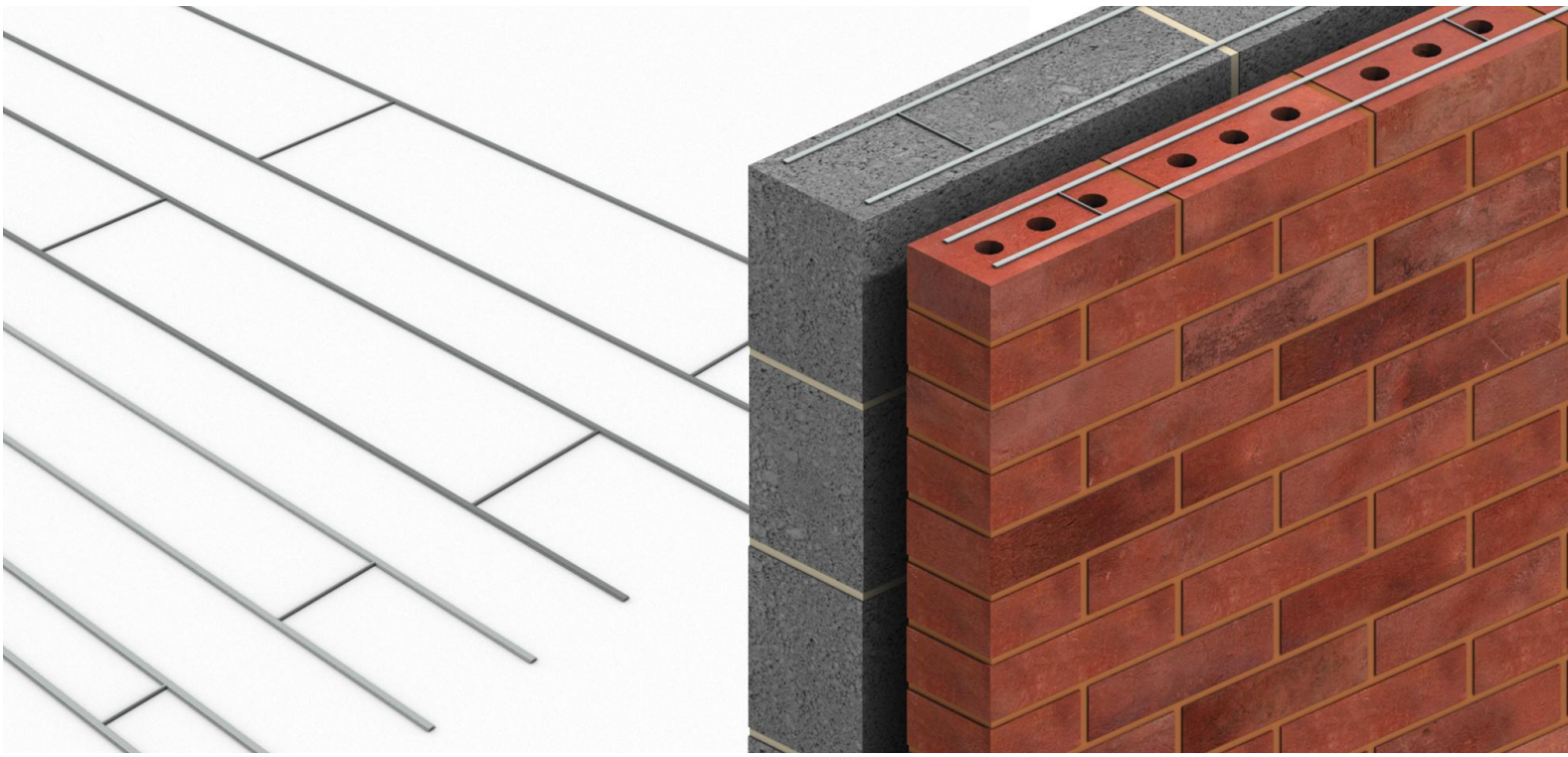
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): ***PCR 2019:14 Construction products. Version 2.0.1, 2025-06-05*** ***UN CPC code(s):*** *42190 - Other structures (except prefabricated buildings) and parts of structures, of iron, steel or aluminium; plates, rods, angles, shapes, sections, profiles, tubes and the like, prepared for use in structures, of iron, steel or aluminium; props and similar equipment for scaffolding, shuttering or pitpropping*
PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/contact.

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: *Callum Hill, JCH Industrial Ecology Ltd* Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Leviat Limited

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Contact: Andrea Warren, EPD.UK@leviat.com

Address and contact information of the LCA practitioner commissioned by the EPD owner:
Laura Cannatà, Eugenia Bertolino
Studio Fieschi & Soci – Tinexta Innovation Hub
Corso Vittorio Emanuele II, 18 10123 Torino, Italy

Description of the organisation:
Leviat is the global leader in lifting, connecting and anchoring technologies for the construction sector. We imagine, model and make engineered solutions and innovative products that enable safer, faster, stronger, more sustainable construction.
Home to trusted product brands such as Ancon, Halfen, Helifix, Isedio and Thermomass, Leviat has an extraordinary legacy of pioneering construction solutions. As an industry leader, driven by innovation and continuous improvement, Leviat is committed to achieving a more sustainable built environment, working closer with our customers & business partners.

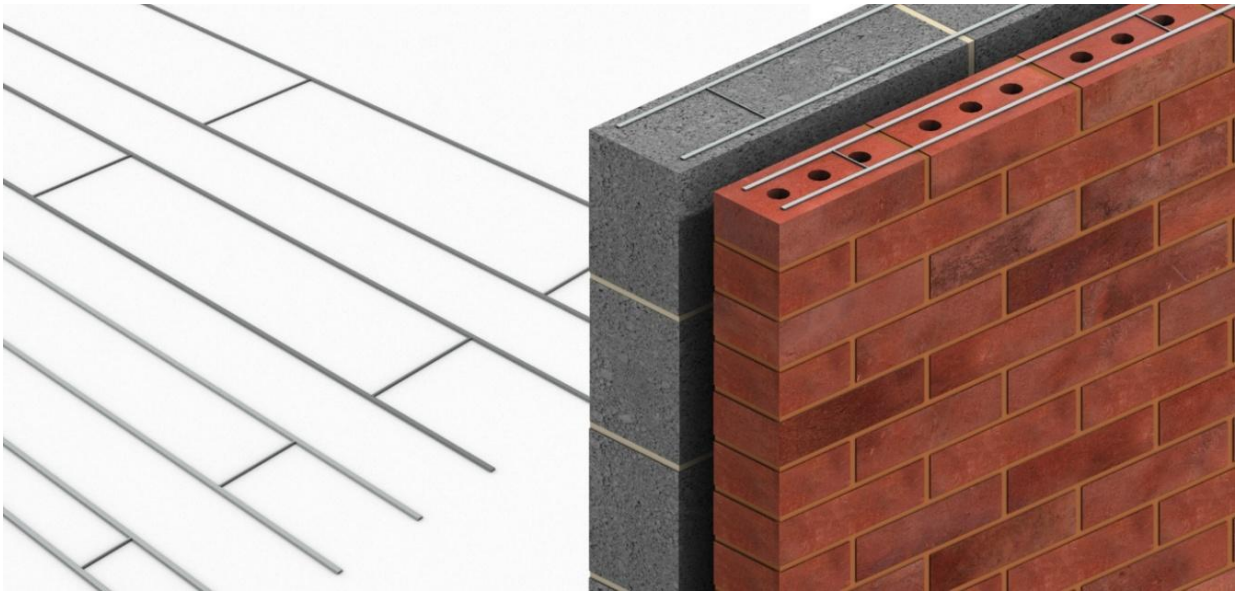
Product-related or management system-related certifications:
The company is ISO 9001, ISO 14001, ISO 45001 certified.

PRODUCT INFORMATION

Product name: Ancon AMR Bed Joint Reinforcement

Product identification: AMR, AMR/CJ, AMR/X

Visual representation of the product



UN CPC code:
42190 - Other structures (except prefabricated buildings) and parts of structures, of iron, steel or aluminium; plates, rods, angles, shapes, sections, profiles, tubes and the like, prepared for use in structures, of iron, steel or aluminium; props and similar equipment for scaffolding, shuttering or pitpropping

Product description: Ancon AMR Masonry Reinforcement enhances the strength and stability of masonry walls by providing additional resistance to lateral loads e.g. wind. It can also be used to reduce the risk of cracking either at stress concentrations around openings or as a result of movement, including the control of shrinkage. Manufactured from high-strength stainless steel, AMR is available in a range of widths to suit different wall thicknesses and is deal for both structural and non-structural applications.

Name and location of production site(s):
Leviat Limited, Deeside Site, North Wales, UK

Name of manufacturer: Leviat Limited

References to any relevant websites for more information or explanatory materials:
https://www.leviat.com/

CONTENT DECLARATION

The product can be of stainless steel or galvanised mild steel. An average composition is considered.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Stainless steel	0,50	26,81%	0,00%	0
Galvanised mild steel	0,50	3,44%	0,00%	0
TOTAL	**1,00**	**30,25%**	**0,00%**	**0**

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Galvanized steel	0,0044	0,44%	0,00
TOTAL	**0,0044**	**0,44%**	**0,00**

For construction products with EPDs compliant with the EN 15804 standard, the EPD must declare the substances contained in the products that are listed on the "Candidate List of Substances of Very High Concern for Authorization" when their content exceeds the thresholds for registration with the European Chemicals Agency (0.1% by weight/weight).

The product does not contain any substances listed on the SVHC list.

LCA INFORMATION

Declared unit: 1 kg of finished product, packed and ready for shipment, based on the average results of the product group. The average environmental profile is calculated as the arithmetic mean of the maximum and minimum profiles of the product family.

Reference service life: for this product, no specific service life is stated. This is because wall ties are permanently installed within the building structure, and their useful life therefore aligns with the lifespan of the building itself. It does not depend on the wall tie as an individual component.

Time representativeness: All specific data from the manufacturer are referred to year 2023.

Geographical scope: Global for raw materials supply and transport (A1-A2), UK for manufacturing (A3), UK+IE for distribution, installation and End of life stages (A4, A5, C1-C4).

Database(s) and LCA software used: Ecoinvent v.3.10, SimaPro v.10.2.0.2.
The study is based on EN 15804 reference package 3.1.

Description of system boundaries:
Cradle-to-gate with options, modules C1-C4, module D and modules A4 and A5. (A1–A3 + A4 + A5 + C + D).
Modules B1 to B7 are not included because the product is permanently embedded in the building structure and does not require energy, water, maintenance, repair, or replacement during its service life.
The system boundaries include:

- **A1 - Raw material supply:** Production of raw materials and semi-finished stainless steel products. This includes the processing of semi-finished products upstream in the supply chain;
- **A2 – Transport to the manufacturer:** Transportation of raw materials (semi-finished products, purchased components) to the company's production site;
- **A3 - Manufacturing:** Manufacturing of the products at Leviat's production site. Production and consumption of electricity used in manufacturing processes. Production and consumption of fossil fuels used for internal product handling and for the management of waste (including packaging waste) generated by the plant. The processing steps included in this module are:
    - Decoiling;
    - Cutting;
    - Welding;
    - Packaging.
- **A4 – Market distribution of the analysed products;**
- **A5 – Installation:** Product installation and EoL of the relevant packaging. Only the product itself is considered: all auxiliaries (bolts, screws, grouts) are excluded
- **C1 - Deconstruction, demolition:** Deconstruction or demolition process;
- **C2 - Transport of waste to treatment/disposal facilities**;
- **C3 - Waste processing:** Waste treatment for recovery/recycling preparation;
- **C4 - Disposal:** Final disposal.

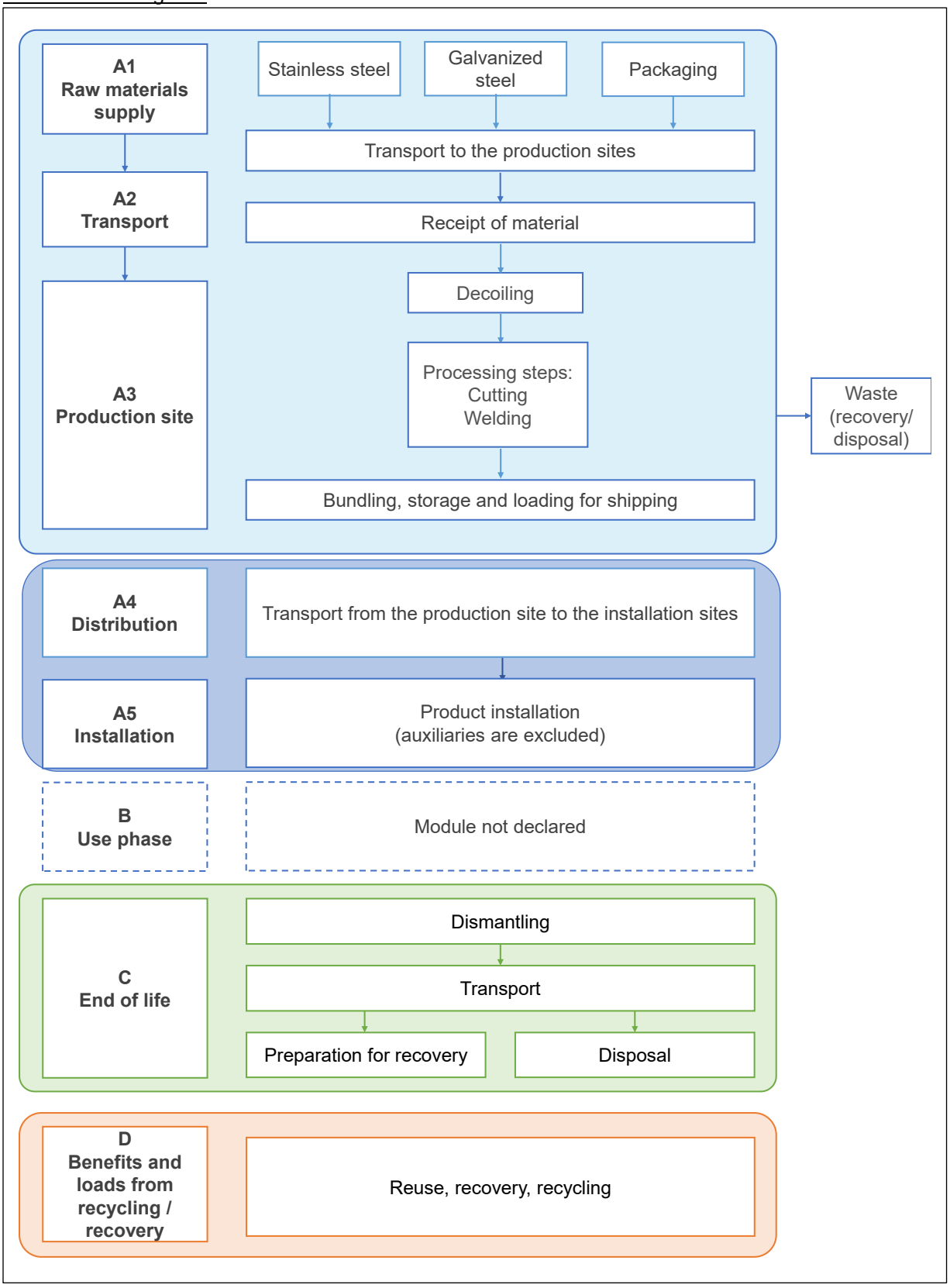
Module D: potential benefits and impacts related to recovery-reuse-recycling of materials and energy along the life cycle. In this module, benefits and/or impacts related to, for example, the potential recycling of materials at the end-of-life of the products under study are assessed. The modelling of recovery-reuse-recycling benefits is carried out according to the requirements of EN 15804:2012 + A2:2019 § 6.4.3.3.

In accordance with the PCR 2019:14 v2.0.1, the system boundaries do not include:

- Input and output flows related to personnel (e.g., energy used in head offices and sales offices, transports of employees to and from workplace, etc);
- Infrastructure and capital goods, with exception for electricity and heat in module A3 and electricity/heat for steel production[1], in accordance with the requirements of PCR 2019:14 (§4.3.6).
- Impacts related to the production and transport of packaging materials of incoming semi-finished products.

[1] The exclusion of capital goods and infrastructure is limited to the main processes (foreground processes, directly modeled in the study). Impacts related to these processes may still be included in the background data (e.g., Ecoinvent data).

Process flow diagram:



More information:
Modules C and D are modelled according to the distribution volumes of the product around the world.

Cut-off:
The cut-off rules in EN 15804:2012 + A2:2019 §6.3.6 and PCR 2019:14 §4.4 apply.
The following contributions were excluded from the model:

- Air transport for distribution in Ireland (module A4, air shipping representing 1% of the total shipments)

No other contribution has been voluntarily excluded from the study.

Allocation rules:
In the case of multifunctional situations, i.e., systems that generate multiple products, the allocation rules set out in PCR 2019:14 apply.
In this LCA study, allocation was applied according to the rules defined in EN 15804:2012 + A2:2019 §6.4.3 and in PCR 2019:14 v 2.0.1 §4.5.1.
For general plant consumption, including electricity, fuels, water, mass allocation was performed on the entire plant production (in terms of kg), as it was not possible to assign specific portions to individual production lines.
This approach was also applied to general waste, except for specific waste streams associated with process waste generated during manufacturing.

Modeling of infrastructure/capital goods:
In accordance with Section 4.3.6 of PCR 2019:14 version 2.0.1, the datasets used for modelling electricity and heat include the impacts associated with the construction of the related infrastructure.

Electricity mix:
The electricity used in the production process (step A1-A3) was modelled based on the REGO certificates assigned to Leviat for the supply period 1st April 2023 – 31st March 2024. The GWP-GHG of the electricity mix used to model module A3 is 2.72E-02kg CO2 eq./kWh.

Recycled raw materials:
The recycled steel has an impact on the GWP-GHG indicator of 9,43E-01 kg CO2eq / kg. This figure refers to the actual mix of pre- and post-consumer recycled material contained in the purchased raw materials. Recycled materials enter the system together with the impact of recycling, while the impact of the material and the preparation to recycling are allocated to the previous system. Pre-consumer scrap carries a portion of the impacts generated by the system that produced it, based on a mass- and economic-allocation approach.

Assumptions for end-of-life scenarios (modules C1-C4):
For streams that leave system boundaries, the polluter pays principle applies, which means that the system boundary to the subsequent product system is set where the waste (e.g. the discarded product) reaches the end-of-waste state (PCR 2019:14, §4.5.2).
In this study, and in compliance with PCR 2019:14 §4.5.1, a conservative approach is adopted, and no environmental flows are allocated to such co-products; instead, all impacts are attributed entirely to the main products.

Module C1: The process of dismantling the wire tie is mainly associated with the process of dismantling the building in which it is contained. In accordance with PCR 2019:14 §4.8.4, it is assumed that the

energy source used for this purpose is diesel fuel and that the average energy consumption at this stage is 1.1 kWh/ton.

Module C2: Transport of materials to recovery or disposal facilities was modelled with an average distance of 80 km travelled by land using a 16–32 tonne Euro 5 lorry, in accordance with PCR 2019:14 §4.8.4. The transport scenario reflects the typical market distribution of the product within the relevant geographical reference area.

Module C3-C4: the end-of-life scenario includes all operations necessary to treat the product until the end-of-waste status is reached.
The following considerations apply:

- The product is composed of steel only; specific end-of-life scenarios distinguishing between recycling and landfilling are applied for this material. No energy recovery is foreseen;
- The share of material sent for recycling in the EU is derived from the Product Environmental Footprint (PEF). It is assumed that the same share can be applied to non-EU scenarios;
- The share of material sent for disposal is deduced from the PEF data on recycling. It is assumed that the same share can be applied to non-EU scenarios;
- In accordance with PCR 2019:14 §4.8.4, for Module C3 - Waste Processing, an average diesel consumption is assumed, consisting of 1.8 kWh/ton for Loading and unloading at sorting facility and 7.4 kWh/ton for the Fragging of steel. An average electricity consumption of 2.2 kWh/ton is also assumed for Mechanical sorting.
- In accordance with PCR 2019:14 §4.8.4, for Module C4 – Disposal, it is assumed an average diesel consumption of 1.6 kWh/ton for Compacting of inert construction waste for landfills (including backfilling).

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	UK	UK+IE	UK+IE	-	-	-	-	-	-	-	UK+ IE	UK+ IE	UK+ IE	UK+ IE	UK+IE
Share of primary data	4.6%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	+/-35%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Variation of the impact indicators within the product family:

The table below shows the impact indicators with variations above 10% between the average product and the products with the best and worst impact profiles in the family. The variation is calculated on the whole life cycle (modules A-C). These differences stem mainly from scrap generated during manufacturing processes such as cutting and hole-punching, which vary with product shape. As these variations do not affect product function, they were not considered sufficient to split the product line into sub-families.

Impact indicator	Variation (A-C)
GWP-total	+/-34,1%
ODP	+/-19,5%
AP	+/-66,0%
EP-freshwater	+/-31,9%
EP-marine	+/-46,9%
EP-terrestrial	+/-49,9%
POCP	+/-47,3%
ADP-minerals&metals	+/-97,8%
ADP-fossil	+/-36,2%
WDP	+/-308,9%

Summary of Data Quality Assessment:

As required by section 4.6.5 of the PCR, the following table provides a summary of the data quality assessment (DQA) for the datasets that contribute to at least 80% of the results for each of the declared environmental impact indicators.

Data Quality Aspect	Details / Description
Data Quality Scheme	EN 15804:2012+A2:2019, Annex E, Table E.1
Use of poor/very poor data	No poor/very poor data have been used.
Use of Fair data with more than 30 % of a core impact	No fair data have been used for relevant processes.
Data Collection period for raw data	The data for modules A1, A2, A3 and A4 were collected by means of questionnaires completed by Leviat personnel and refer to the production year 2023. Producer-specific data refer mostly to the year 2023, while some information (e.g. the REGO mix) refer to a 12-months period ranging from 2023 and 2024. The disposal and recovery scenarios described in modules C1, C2, C3, and C4, as well as module D, are based on the latest statistics and literature data.
Geography	Global for raw materials supply and transport (A1-A2), UK for manufacturing (A3), UK+IE for distribution and End of life stages (A4, C1-C4).
Geography and technology	The product is mainly manufactured by Leviat in the Deeside plant, located in North Wales, UK. This EPD covers the Ancon AMR Masonry Reinforcement, which enhances the strength and stability of masonry walls by providing additional resistance to lateral loads e.g. wind. It can also be used to reduce the risk of cracking either at stress concentrations around openings or as a result of movement, including the control of shrinkage. Manufactured from high-strength stainless steel, AMR is available in a range of widths to suit different wall thicknesses and is deal for both structural and non-structural applications. The product modelling accounts for the contribution of different steel suppliers. The manufacturing processes are represented comprehensively: from coil receptions and subsequent decoiling, through intermediate operations such as cutting and welding, to final packaging. The modelling considers all relevant aspects of the production processes, including energy and fuels consumption, as well as the geographical context of the manufacturing activities (UK).
LCI/LCA database	Ecoinvent v.3.10, SimaPro v.10.2.0.2
EPD used	No EPDs were used as data source.
Other information	The end-of-life scenario has been modelled in accordance with PCR 2019:14 §4.8.4. The modelling includes the energy required for product dismantling, as well as the transport to treatment facilities or landfills, considering the market distribution of the product. Since the product is entirely made of steel, specific end-of-life scenarios distinguishing between recycling and landfilling have been applied, with no energy recovery assumed. The shares of recycled and disposed material are based on Product Environmental Footprint (PEF) data. The modelling also accounts for energy use during waste processing and disposal activities, in line with the assumptions described in PCR 2019:14.

The data quality information presented in this EPD has been prepared and reported in accordance with the requirements set forth in UNI EN 15941:2024 and complies with the data quality criteria specified in EN 15804:2012+A2:2019.

As requested by PCR, the following table provides information on the quality of the data used for processes contributing more than 10% to the overall GWP-GHG indicator value for the product considered.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Generation of electricity used in manufacturing of product	Database	Ecoinvent v3.10, REGO certificate	2023	Primary data	**0,2%**
Transport of steel to manufacturing site	Database	Ecoinvent v.3.10	2023	Primary data	**4,4%**
Production of steel	Database	Ecoinvent v.3.10	2023	Secondary data	**0,0%**
Total share of primary data, of GWP-GHG results for A1-A3 *					**4,6%**

* *The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.*

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

The results presented in the following sections refer to the average results of the different variants of the product analysed.

The difference between the declared average GWP-GHG result, and the products with GWP-GHG results furthest away, for modules A1-A3, is about 35%, due to the scrap production during manufacturing.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

The characterization method used for results calculation does not present a regionalisation for elementary flows related to Water Depletion Potential.

All non-zero values for the Secondary materials indicator in modules other than A1-A3 are modelling artefacts.

Inventory indicators relating to the use of renewable and non-renewable secondary fuels, as well as hazardous and non-hazardous waste disposed, have been assumed 0, as these flows are not significant for the products under analysis and their modelling would be subject to a high level of uncertainty.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Mandatory impact category indicators according to EN 15804

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	2,52E+00	3,76E-02	4,00E-04	3,72E-04	1,24E-02	5,45E-03	1,42E-03	3,26E-02
GWP-fossil	kg CO_2 eq.	2,50E+00	3,76E-02	4,00E-04	3,72E-04	1,24E-02	5,44E-03	1,42E-03	3,25E-02
GWP-biogenic	kg CO_2 eq.	8,15E-03	1,40E-06	2,50E-08	1,60E-08	4,68E-07	1,76E-06	2,49E-06	5,04E-05
GWP-luluc	kg CO_2 eq.	1,01E-02	9,27E-07	6,07E-08	1,28E-08	3,05E-07	9,35E-06	1,89E-07	4,28E-05
ODP	kg CFC 11 eq.	2,40E-08	7,39E-10	6,29E-12	5,85E-12	2,53E-10	8,63E-11	4,62E-11	3,62E-10
AP	mol H^+ eq.	2,34E-02	1,91E-04	3,68E-06	3,48E-06	3,09E-05	3,90E-05	1,65E-05	1,82E-04
EP-freshwater	kg P eq.	2,09E-04	3,10E-08	7,00E-10	3,51E-10	1,04E-08	6,79E-08	4,40E-08	1,82E-06
EP-marine	kg N eq.	3,24E-03	5,86E-05	1,72E-06	1,63E-06	1,19E-05	1,69E-05	4,27E-06	2,98E-05
EP-terrestrial	mol N eq.	3,73E-02	6,46E-04	1,89E-05	1,79E-05	1,30E-04	1,85E-04	4,60E-05	3,39E-04
POCP	kg NMVOC eq.	1,14E-02	2,25E-04	5,61E-06	5,33E-06	5,39E-05	5,56E-05	1,66E-05	9,59E-05
ADP-minerals&metals*	kg Sb eq.	1,62E-04	1,15E-09	1,70E-11	1,55E-11	4,10E-10	2,83E-10	3,89E-10	7,68E-07
ADP-fossil*	MJ	2,74E+01	4,88E-01	5,30E-03	4,90E-03	1,64E-01	7,82E-02	3,39E-02	4,98E-01
WDP*	m^3	8,64E-02	2,05E-04	4,78E-06	3,86E-06	6,97E-05	2,16E-04	0,00E+00	9,22E-03
Acronyms		GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption							

** The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.*
The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.
The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Additional mandatory and voluntary impact category indicators

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[2]	kg CO_2 eq.	2,52E+00	3,76E-02	4,00E-04	3,72E-04	1,24E-02	5,45E-03	1,42E-03	3,26E-02

Additional environmental impact indicators are not declared in this EPD. Detailed results for these indicators are available in the product's LCA Report, referenced in the Bibliography.

Resource use indicators

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE*	MJ	4,85E+00	1,66E-03	2,94E-05	1,10E-05	5,80E-04	3,60E-03	5,66E-04	1,35E-01
PERM*	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,85E+00	1,66E-03	2,94E-05	1,10E-05	5,80E-04	3,60E-03	5,66E-04	1,35E-01
PENRE*	MJ	2,74E+01	4,88E-01	5,30E-03	4,90E-03	1,64E-01	7,82E-02	3,39E-02	4,98E-01
PENRM*	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,74E+01	4,88E-01	5,30E-03	4,90E-03	1,64E-01	7,82E-02	3,39E-02	4,98E-01
SM	kg	8,23E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,42E-01	8,78E-05	1,76E-06	1,04E-06	2,98E-05	1,41E-04	0,00E+00	4,24E-03
Acronyms		PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water							

**Primary energy contained in the packaging material is not accounted for and is considered lost.*

[2] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed*	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed*	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	4,43E-05	4,37E-08	8,01E-10	2,50E-10	1,54E-08	1,07E-07	9,44E-09	1,93E-06

**Hazardous waste disposed and Non-hazardous waste disposed indicators are set to 0 because all the relevant waste treatment processes are included within the system boundaries.*

Output flow indicators

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**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	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,50E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy. thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional LCA results (other environmental performance results) of the product(s)

As per the PCR, results for the 100% recycling and 100% disposal end-of-life scenarios are provided below.
The results of the 100% recycling end-of-life scenario are shown below.

Mandatory impact category indicators according to EN 15804 (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3,72E-04	1,24E-02	6,41E-03	0,00E+00	-1,37E-01
GWP-fossil	kg CO_2 eq.	3,72E-04	1,24E-02	6,40E-03	0,00E+00	-1,38E-01
GWP-biogenic	kg CO_2 eq.	1,60E-08	4,68E-07	2,07E-06	0,00E+00	9,22E-05
GWP-luluc	kg CO_2 eq.	1,28E-08	3,05E-07	1,10E-05	0,00E+00	8,63E-05
ODP	kg CFC 11 eq.	5,85E-12	2,53E-10	1,02E-10	0,00E+00	7,39E-11
AP	mol H^+ eq.	3,48E-06	3,09E-05	4,59E-05	0,00E+00	-4,03E-04
EP-freshwater	kg P eq.	3,51E-10	1,04E-08	7,99E-08	0,00E+00	-5,11E-06
EP-marine	kg N eq.	1,63E-06	1,19E-05	1,99E-05	0,00E+00	-9,53E-05
EP-terrestrial	mol N eq.	1,79E-05	1,30E-04	2,18E-04	0,00E+00	-1,14E-03
POCP	kg NMVOC eq.	5,33E-06	5,39E-05	6,54E-05	0,00E+00	-4,33E-04
ADP-minerals&metals*	kg Sb eq.	1,55E-11	4,10E-10	3,33E-10	0,00E+00	-2,97E-07
ADP-fossil*	MJ	4,90E-03	1,64E-01	9,20E-02	0,00E+00	-8,37E-01
WDP*	m^3	3,86E-06	6,97E-05	2,54E-04	0,00E+00	1,94E-03
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption					

** The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.*

Additional mandatory and voluntary impact category indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[3]	kg CO_2 eq.	3,72E-04	1,24E-02	6,41E-03	0,00E+00	-1,37E-01

Resource use indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
PERE*	MJ	1,10E-05	5,80E-04	4,23E-03	0,00E+00	1,53E-01
PERM*	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,10E-05	5,80E-04	4,23E-03	0,00E+00	1,53E-01
PENRE*	MJ	4,90E-03	1,64E-01	9,20E-02	0,00E+00	-8,37E-01
PENRM*	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,90E-03	1,64E-01	9,20E-02	0,00E+00	-8,37E-01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,04E-06	2,98E-05	1,66E-04	0,00E+00	7,02E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water					

Primary energy contained in the packaging material is not accounted for and is considered lost.

[3] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed*	kg	0,00E+00	0,00E+00	1,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed*	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	2,50E-10	1,54E-08	1,26E-07	0,00E+00	5,79E-06

**Hazardous waste disposed and Non-hazardous waste disposed indicators are set to 0 because all the relevant waste treatment processes are included within the system boundaries.*

Output flow indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**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
Material for recycling	kg	0,00E+00	0,00E+00	1,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	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	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

The results of the 100% landfill end-of-life scenario are shown below.

Mandatory impact category indicators according to EN 15804 (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3,72E-04	1,24E-02	0,00E+00	9,49E-03	0,00E+00
GWP-fossil	kg CO_2 eq.	3,72E-04	1,24E-02	0,00E+00	9,47E-03	0,00E+00
GWP-biogenic	kg CO_2 eq.	1,60E-08	4,68E-07	0,00E+00	1,66E-05	0,00E+00
GWP-luluc	kg CO_2 eq.	1,28E-08	3,05E-07	0,00E+00	1,26E-06	0,00E+00
ODP	kg CFC 11 eq.	5,85E-12	2,53E-10	0,00E+00	3,08E-10	0,00E+00
AP	mol H^+ eq.	3,48E-06	3,09E-05	0,00E+00	1,10E-04	0,00E+00
EP-freshwater	kg P eq.	3,51E-10	1,04E-08	0,00E+00	2,93E-07	0,00E+00
EP-marine	kg N eq.	1,63E-06	1,19E-05	0,00E+00	2,85E-05	0,00E+00
EP-terrestrial	mol N eq.	1,79E-05	1,30E-04	0,00E+00	3,07E-04	0,00E+00
POCP	kg NMVOC eq.	5,33E-06	5,39E-05	0,00E+00	1,11E-04	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,55E-11	4,10E-10	0,00E+00	2,59E-09	0,00E+00
ADP-fossil*	MJ	4,90E-03	1,64E-01	0,00E+00	2,26E-01	0,00E+00
WDP*	m^3	3,86E-06	6,97E-05	0,00E+00	0,00E+00	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption					

** The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.*

Additional mandatory and voluntary impact category indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[4]	kg CO_2 eq.	3,72E-04	1,24E-02	0,00E+00	9,49E-03	0,00E+00

Resource use indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
PERE*	MJ	1,10E-05	5,80E-04	0,00E+00	3,78E-03	0,00E+00
PERM*	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,10E-05	5,80E-04	0,00E+00	3,78E-03	0,00E+00
PENRE*	MJ	4,90E-03	1,64E-01	0,00E+00	2,26E-01	0,00E+00
PENRM*	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,90E-03	1,64E-01	0,00E+00	2,26E-01	0,00E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,04E-06	2,98E-05	0,00E+00	0,00E+00	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water					

**Primary energy contained in the packaging material is not accounted for and is considered lost.*

[4] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Waste indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed*	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed*	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	2,50E-10	1,54E-08	0,00E+00	6,29E-08	0,00E+00

**Hazardous waste disposed and Non-hazardous waste disposed indicators are set to 0 because all the relevant waste treatment processes are included within the system boundaries.*

Output flow indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	**Unit**	**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
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	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	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL ENVIRONMENTAL INFORMATION

Our Wall Ties & Restraints are manufactured from stainless steel making them suitable for most building applications. Stainless steel is also class A1 non-combustible.
Life-cycle costing is increasingly recognized as the true way to establish the cost of building components. The use of stainless steel means no costly remedial or refurbishment measures are required during the life of the structure. At the end of a long service life, our stainless steel products are 100% recyclable. When a product finally reaches the end of its long service life, it remains a valuable source of its main alloying elements - chromium, nickel and molybdenum. These can be easily recovered and separated from the other materials and returned to the production process. Stainless steel recycling is an economically viable, self-sustaining process. There are considerable savings in energy, and reduced CO2 emissions, in production methods which use recycled materials. The amount of recycled material in any stainless steel product is typically 70-90%, and as scrap availability is the limiting factor, this percentage will increase as the use of stainless steel continues to grow. The raw material produced today will not be recycled for many years. In addition to a product's end-of-life recycling, any scrap material generated during its manufacture is recycled in the same way. Leviat recycles 100% of its stainless steel scrap.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
EPD	Environmental Product Declaration
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
PCR	Product Category Rules
PEF	Product Environmental Footprint
Other Abbreviations	
ADP	Abiotic Depletion Potential
AP	Acidification Potential
BoM	Bill of Materials
EP	Eutrophication Potential
EoL	End Of Life
EoW	End of Waste
GWP	Global Warming Potential
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
LDPE	Low-density polyethylene

REFERENCES

a) General Programme Instructions of International EPD System. Version 5.0.1.
b) PCR 2019:14. Construction Products. Version 2.0.1
c) EN 15804:2012 + A2:2019 + AC, Sustainability of construction works – Environmental Product Declarations – Core rules for the product category
d) ISO 14025:2010, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
e) ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework
f) ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines
g) Association of Issuing Bodies, European Residual Mixes 2023
h) PlasticsEurope, Eco-profiles and Environmental Product Declarations of the European Plastics Manufacturers, April 2014; December 2016: update water balance
i) European Commission, 2021, Recommendation 2021/2279 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations
j) Gervasio, H., Dimova, S., 2018, Model for Life Cycle Assessment (LCA) of buildings, EC JRC technical reports
k) Eurostat waste database: https://ec.europa.eu/eurostat/web/waste/data/database
l) Studio Fieschi & soci Srl, Life Cycle Assessment (LCA) of Leviat's Wall-Ties, 2026.

VERSION HISTORY

Original Version of the EPD, 2026-02-01

Version 2026-02-25: editorial update of the *ADDITIONAL ENVIRONMENTAL INFORMATION* section.
Version 2026-06-03: editorial update of the Company logo.

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