

# Environmental Product Declaration



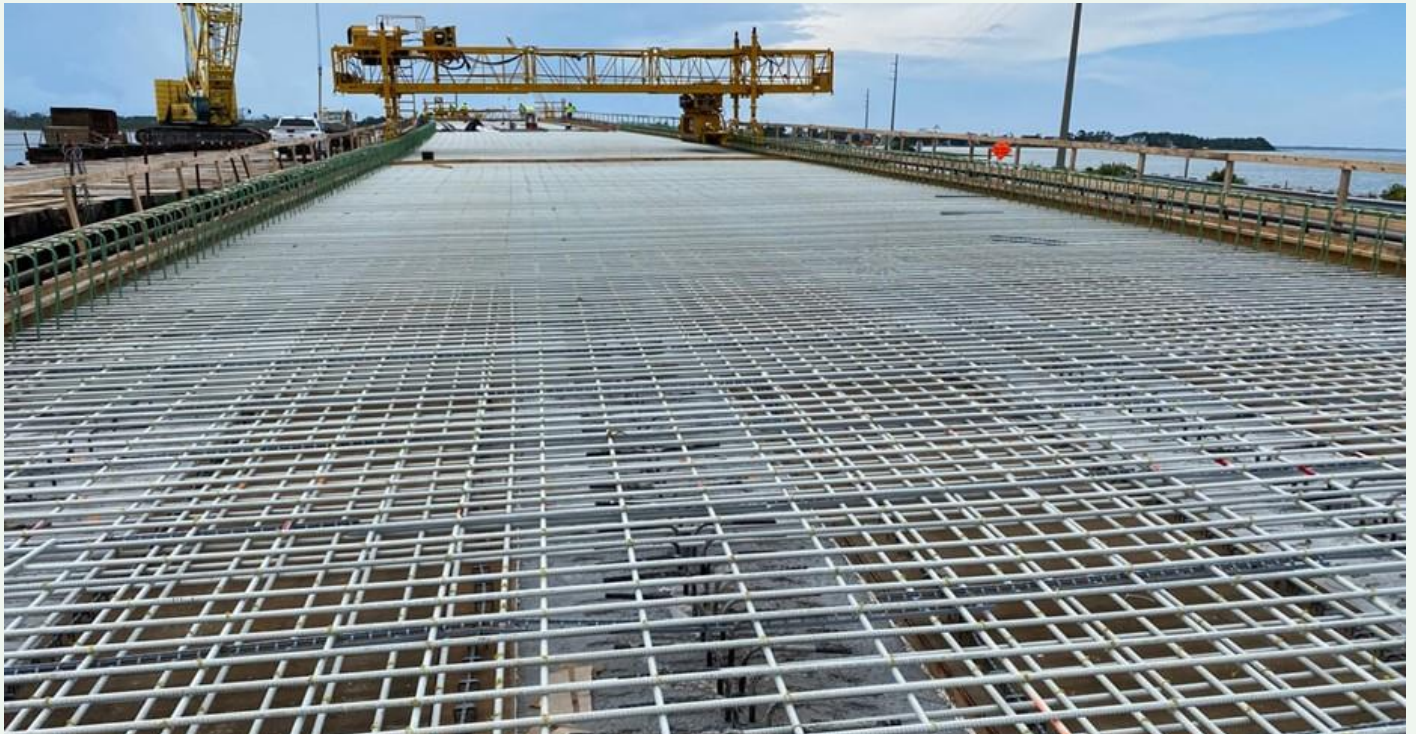
In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## Mateenbar Fibreglass Rebars, Dowels, Rockbolts and Form Ties



From  
**Pultron Composites Ltd**

Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
Regional operator:	EPD Australia Ltd
EPD registration number:	EPD-IES-0022664
Version date:	2025-06-18
Valid until:	2030-06-17



## General information

### Program information

<b>Programme:</b>	The International EPD® System	EPD Australasia Ltd
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden	EPD Australasia Ltd 315a Hardy Street Nelson 7010, New Zealand
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a> ,	<a href="http://www.epd-australasia.com">www.epd-australasia.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a> ,	<a href="mailto:info@epd-australasia.com">info@epd-australasia.com</a>

### Accountabilities for PCR, LCA and independent, third-party verification

#### 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 1.3.4; Published on 2024.04.30. Based on CEN standard EN 15804. CEN standard EN 15804 serve as the core PCR), UN CPC- 369 (Other plastics products)

PCR review was conducted by: The Technical Committee of the International EPD System. See [www.environdec.com](http://www.environdec.com) for a list of members.

#### Life Cycle Assessment (LCA)

LCA accountability: Dr. Rajesh Kumar Singh, Senior Director, Sphera India Private Limited, a subsidiary of Sphera Solutions Inc

#### Third-party verification:

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by individual verifier  
Third-party verifier: Dr Hüdayi Kara,  
Metsims Sustainability Consulting,  
4 Clear Water Place, Oxford, OX2 7NL, UK  
Email: [hudai.kara@metsims.com](mailto:hudai.kara@metsims.com)

External, Third party verifier approved by EPD Australasia and The 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 registered in different EPD programs, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

## Company information

Owner of the EPD: Pultron Composites Ltd

Contact: Dion Neems, QHS Manager, [dion@pultron.com](mailto:dion@pultron.com)  
Address: Pultron Composites Ltd, 342 Lytton Road, Gisborne, New Zealand.

Description of the organization: Pultron Composites Ltd is a Composites Manufacturing Company based in New Zealand, that specializes in the manufacture of high performance pultruded composite products.

This EPD refers to Mateenbar Fibreglass Rebars, Dowels, Rockbolts, and Form Ties which is used as a sustainable alternative for concrete reinforcement exposed to aggressive environments to eliminate concrete spalling due to the corrosion of rebar, to achieve longer-lasting structures.

Product-related certifications: ACI CODE-440.11-22, ASTM D7957-22 & ASTM D8505-23, AS5204:2023, AC454-22, ISO 9001:2015.

Name and location of production site(s):  
Pultron Composites Ltd,  
342 Lytton Road, Gisborne,  
New Zealand



## Product information

**Product names:** Mateenbar46 Fiberglass Rebars, Greenbar2X Fiberglass Rebars, Mateenbar60 Fiberglass Rebars, Dowels, Rockbolts, Form Ties

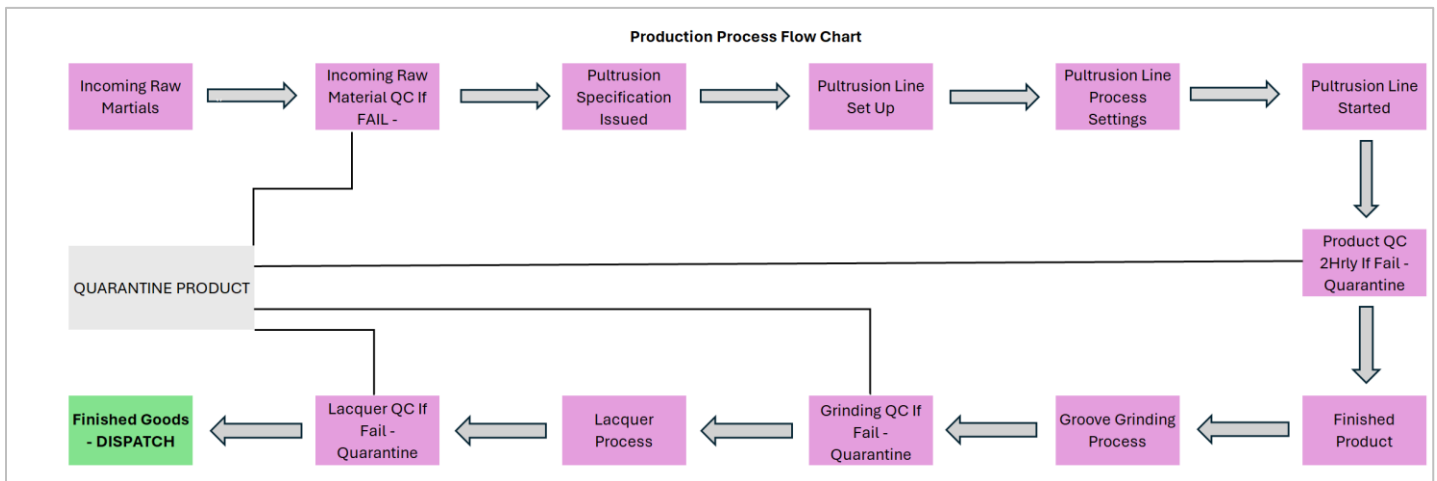
**Product identification:** Glass fiber-reinforced polymer rebar for the internal reinforcement of concrete, Glass fiber-reinforced polymer dowels for the stabilization of concrete slabs, GPRP Bolts for stabilization of concrete blocks, rock faces, tunnel walls and soil slopes. Form Ties to ensure stability of concrete formwork.

**UN CPC code:** 369 (Other plastics products)

**Geographical scope:** New Zealand.





**Product description:** Mateenbar rebars, Dowels, Rockbolts, and Form ties are products that utilize fiberglass roving's and resin mixtures that are combined through the Pultrusion process to be used as a direct replacement to traditional steel reinforcement in concrete structures. Mateenbar products are designed to be corrosion-resistant, stronger than steel, lightweight, and are more sustainable than traditional reinforcement in various applications which include infrastructure, marine, electromagnetic and building structures as shown below.

**Manufacturing Process:** Pultron Composites manufactures their fiber-reinforced polymer (FRP) composites using the pultrusion process, which involves pulling continuous strands of fibers through a resin impregnation bath to saturate them, then through a heated forming die to shape and cure the material into its final profile. This automated process allows for the continuous production of high-quality, consistent FRP profiles with a constant cross-section, resulting in strong, lightweight, and corrosion-resistant materials. The final profiles are then cut to the desired length, making the pultrusion process efficient and suitable for producing durable structural components. The product formulation of the Mateenbar46 Fiberglass Rebars, Greenbar2X Fiberglass Rebars, Mateenbar60 Fiberglass Rebars, Dowels, Rockbolts, Form Ties are same.





**Application:** Construction, aerospace, automotive and electrical power engineering as well as sports and tourism applications.

			
Infrastructure	Coastal / Marine	Electromagnetic	Buildings
<ul style="list-style-type: none"> <li>➤ Bridge decks</li> <li>➤ Traffic barriers</li> <li>➤ Pavements / sidewalks</li> <li>➤ Approach slabs</li> <li>➤ Roadways</li> <li>➤ Flood channels</li> <li>➤ Soft-eye for tunnels</li> </ul>	<ul style="list-style-type: none"> <li>➤ Seawalls / MSE walls</li> <li>➤ Reservoirs / dams</li> <li>➤ Marine walls</li> <li>➤ Precast elements</li> <li>➤ Pools</li> </ul>	<ul style="list-style-type: none"> <li>➤ Substations</li> <li>➤ MRI rooms</li> <li>➤ Transformer base</li> <li>➤ Light / heavy rail</li> <li>➤ Power stations</li> <li>➤ Compass Calibration Pads</li> </ul>	<ul style="list-style-type: none"> <li>➤ Foundations</li> <li>➤ Desalination plants</li> <li>➤ Slab on Grade</li> <li>➤ Wall panels</li> <li>➤ Retaining walls</li> </ul>

The specifications and conversions for different bar types, minimum tensile modulus and size are provided below:

- Mateenbar GFRP Rebar, Dowels, Rockbolts, and Form Ties:
  - Specifications
    - AS 5204:2023 Fiber-Reinforced Polymer Bars
    - ASTM D7957 – Solid round glass fiber reinforced polymer bars for concrete reinforcement
    - ASTM D8505 Standard Specification for Basalt and Glass Fiber Reinforced Polymer (GFRP) Bars for Concrete Reinforcement.
    - ASTM D8444 Standard Specification for Fiber Reinforced Polymer Dowel Bars for Load Transfer Between Concrete Slabs.
    - ACI 440.6R – Specification for carbon and glass FRP materials for concrete reinforcement
    - CSA S807 – Specification for fiber-reinforced polymers
      - CSA S807 requirements for D1 bars by keeping at least 80% of their initial tensile strength.
    - ASTM D8505 Standard Specification for Basalt and Glass Fiber Reinforced Polymer (GFRP) Bars for Concrete Reinforcement.
    - ASTM D8444 Standard Specification for Fiber Reinforced Polymer Dowel Bars for Load Transfer Between Concrete Slabs.
    - AC454-2022 Acceptance Criteria for Fiber Reinforced Polymer (FRP) Bars for Internal Reinforcement of Concrete Members

Physical Properties of Mateenbar, Dowels, Rockbolts, and Form ties:

Parameter	Units	Value
Ultimate Tensile Force	kN	Reference Table 3 Geometric and Mechanical Property Requirements ASTM-D7957M for Bar designation No.
Degree of Cure	%	≥95%
Glass Transitional Temp	°C	≥100°C
Moisture Absorption (24hr)	%	≤0.25%
Fibre Content by Weight	%	≥70 %
Shear Strength	MPa	> 50 MPa
Bond Strength	MPa	10
Thermal Conductivity	W/(m·°C)	<1
Electrical Resistivity	Ω·m	>200 x 10 <sup>10</sup>

Nominal Diameter	ASTM Bar Design No.	Nominal Cross-Sectional Area	Product weight	Ultimate Tensile Strength	Tensile Strain	Modulus of Elasticity
mm	#	mm <sup>2</sup>	g/m	MPa	%	GPa
M6	2	32	97	1000	≥1.1 %	60
M10	3	71	185	1000	≥1.1 %	60
M12	4	129	315	1000	≥1.1 %	60
M16	5	199	476	1000	≥1.1 %	60
M20	6	284	702	1000	≥1.1 %	60
M22	7	387	960	900	≥1.1 %	60
M24	8	510	1,252	900	≥1.1 %	60
M28	9	645	1,575	800	≥1.1 %	60
M32	10	819	2,050	800	≥1.1 %	60

The conversion of kilograms to linear meter is provided below:

Diameter (mm)	Weight (kg/m)	Linear Meters per kg
6	0.060	16.67
8	0.105	9.52
10	0.164	6.10
13	0.275	3.64
14	0.320	3.13
16	0.417	2.40
17.5	0.500	2.00
19	0.586	1.71
22	0.787	1.27
25	1.015	0.99
28.5	1.317	0.76
32	1.660	0.60
37.5	2.278	0.44
40	2.590	0.39
50	4.050	0.25

## LCA information

Declared unit: 1 kg of Mateenbar Fiberglass Rebar, Dowels, Rockbolts, and Form Ties products listed below, including packaging.

Reference service life: The RSL is understood as the period of time until GFRP Rebar, Dowels, Rockbolts, and Form Ties is replaced or restored. The expected service life of Fiberglass Rebar, Dowels, Rockbolts, and Form Ties is approx. 100 years, however, from the conservative perspective, a 50-year RSL was adopted in the study.

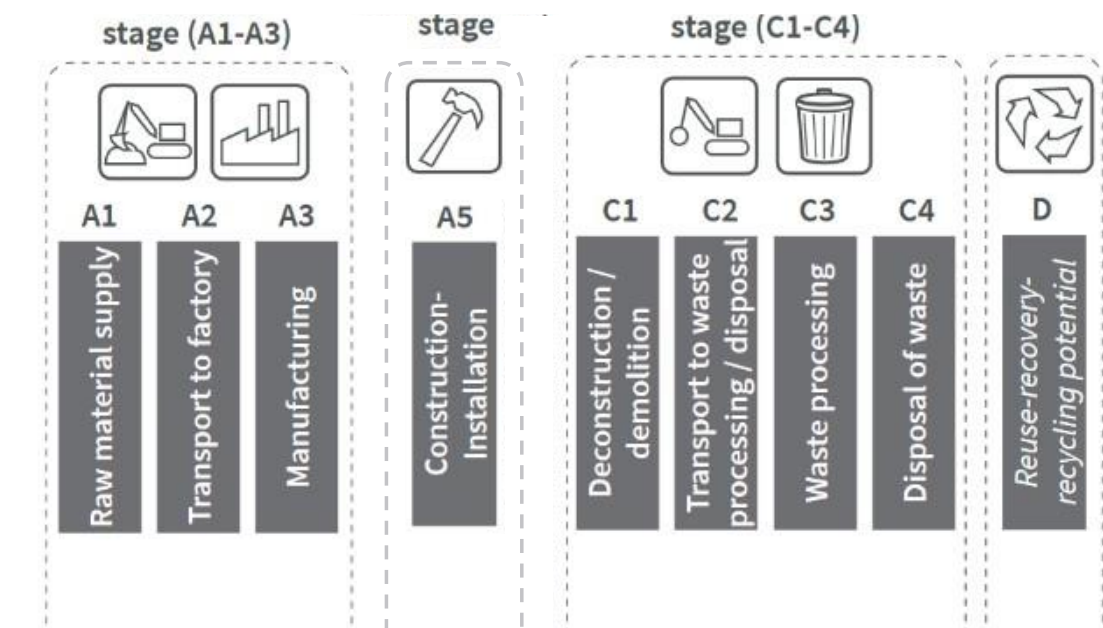
Time representativeness: April 2023- March 2024

Database(s) and LCA software used: The background data has been taken from the available Sphera Managed LCA Content 2023.2 using Sphera's LCA for Experts (LCA FE) software, version 10.8

Description of system boundaries: It includes cradle to gate stage (A1-A3) with additional modules A5, C1–C4, and module D.

Reference package: EN 15804 reference package based on EF 3.1.

System Boundaries:



**- Module A1 to A3:**

Production starts with raw materials. Raw material stage includes raw material extraction/preparation and pre-treatment processes before production. Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant. The pultrusion process is involved in manufacturing of fiberglass rebar & Dowels with basic materials like glass fiber rovings and vinyl ester resin. The electricity for the manufacturing process has been sourced from New Zealand grid. The composition considered in the Electricity grid mix dataset is Electricity from hydro – 57.13%, Electricity from geo thermal – 17.96%, Electricity from natural gas – 13.14%, Electricity from wind – 5.04%, Electricity from hard coal – 3.50%, Electricity from coal gases – 1.51%, Electricity from biomass (solid) – 0.75%, Electricity from biogas – 0.62%, Electricity from solar – 0.28%, Electricity from lignite – 0.05%, Electricity from fuel oil – 0.01%. The GHG-GWP impact for electricity used for manufacturing is 0.159 kg CO<sub>2</sub> eq./kWh. The manufactured products are then packaged to be sold.

- **Module A5:**

The installation stage includes the treatment of packaging materials used. The plastic used in packaging is landfilled, the wooden pallets are incinerated.

- **Module C1 to C4:**

For module C1 it is assumed that manual demolition has been considered. These modules consider the transportation of the dismantled components to their End of Life (EoL) destination (C2), The waste processing (C3) involves fine grinding of waste, consuming 0.0018 kWh/kg of electricity. There is no landfilling happening here as the product is completely recycled as its end of life, thus module C4 is zero.

- **Module D:**

In module D stage, benefits from the recycling of waste is included.

Data quality assessment and declaration:

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of Product	Collected data	EPD Owner	FY 2023-2024	Primary data	0.66%
Generation of electricity used in manufacturing	Collected data and Database	Sphera MLC 2023.2 and EPD owner	FY 2023-2024	Primary data	0.38%
Transport of raw materials to the manufacturing site	Database	Sphera MLC 2023.2	FY 2023-2024	Primary data	4.42%
Production of packaging	Collected data and Database	EPD Owner	FY 2023-2024	Primary data	1.80%
<b>Total share of primary data, of GWP-GHG results for A1-A3</b>					<b>7.27%</b>

Note: The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that does not capture all relevant aspects of data quality. The indicator is not comparable across product categories.

Cut-off criteria:

The environmental impact of the product studied has been assessed by considering all significant processes, materials, and emissions. Excluded flows are assumed to have a negligible impact, contributing less than 5% to the cumulative impact assessment categories. The production of capital equipment, facilities, and infrastructure required for manufacture has not been considered.

Data quality and sources:

Data quality is compliant with ISO 14025:2006. All primary data was collected for April 23 – March 24. All background data come from the Sphera Managed LCA Content 2023.2 database.

Allocation:

No allocation has been applied, as there were no by-products or co-products from the manufacturing process



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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	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	ND	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	NZ	-	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	7.27%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(X- Module declared, ND – Not declared)

## Content information

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product and kg C/kg
Glass Fibre	0.85	0	0
Vinyl ester resin	0.15	0	0
TOTAL	1	0	0
Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Wooden pallets	0.05	5	0.02
Straps	0.0002	0.02	0
Plastic ties	0.00012	0.012	0
TOTAL	0.05	5.032	0.02

Products do not contain any substances that can be included in “Candidate List of Substances of Very High Concern for Authorization” and raw materials used are not part of the EU REACH regulation.

## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804

The environmental performance of the functional unit of one kg of GFRP Rebar, Dowels, Rockbolts, and Form Ties are reported below using the parameters and units as specified in PCR 2019:14 v1.3.4.

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 scenarios included are currently in use and are representative for one of the most probable alternatives.

### Mandatory impact category indicators according to EN 15804+A2

Results for 1 kg of GFRP Rebar, Dowels, Rockbolts and Form Ties								
Impact indicators	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	2.48E+00	3.16E-02	0.00E+00	4.73E-03	2.37E-04	0.00E+00	-2.03E-03
GWP-fossil	kg CO <sub>2</sub> eq.	2.53E+00	-1.34E-02	0.00E+00	4.73E-03	2.37E-04	0.00E+00	-2.02E-03
GWP-biogenic	kg CO <sub>2</sub> eq.	-4.50E-02	4.50E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-luluc	kg CO <sub>2</sub> eq.	7.16E-04	-2.47E-07	0.00E+00	5.86E-08	9.60E-09	0.00E+00	-8.97E-06
ODP	kg CFC 11 eq.	5.94E-12	-1.19E-15	0.00E+00	1.11E-16	1.68E-16	0.00E+00	-1.32E-14
AP	mol H <sup>+</sup> eq.	1.80E-02	-2.81E-05	0.00E+00	5.82E-06	1.26E-06	0.00E+00	-1.02E-05
EP-freshwater	kg P eq.	4.41E-06	-6.75E-09	0.00E+00	8.80E-10	3.05E-10	0.00E+00	-6.39E-09
EP-marine	kg N eq.	3.29E-03	-1.17E-05	0.00E+00	2.46E-06	5.32E-07	0.00E+00	-3.62E-06
EP-terrestrial	mol N eq.	3.60E-02	-1.38E-04	0.00E+00	2.78E-05	6.29E-06	0.00E+00	-3.97E-05
POCP	kg NMVOC eq.	1.01E-02	-3.03E-05	0.00E+00	5.64E-06	1.40E-06	0.00E+00	-1.01E-05
ADP-minerals & metals*	kg Sb eq.	2.72E-07	-4.29E-10	0.00E+00	1.61E-11	1.10E-11	0.00E+00	-1.75E-10
ADP-fossil*	MJ	3.99E+01	-1.93E-01	0.00E+00	6.83E-02	3.09E-03	0.00E+00	-3.23E-02
WDP*	m <sup>3</sup> world equiv.	4.47E-01	5.30E-04	0.00E+00	8.35E-06	1.43E-04	0.00E+00	-2.18E-04
Acronyms	<b>Caption:</b> GWP - total = global warming potential; GWP - fossil = global warming potential (fossil fuel only); GWP - biogenic = global warming potential (biogenic); GWP - luluc = global warming potential (land use only); GWP-GHG* = global warming potential (greenhouse gases) This indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product with characterization factors (CFs) based on IPCC (2013); ODP = ozone depletion; AP = acidification terrestrial and freshwater; EP freshwater = eutrophication potential (freshwater); EP - marine = eutrophication potential (marine); EP- terrestrial = eutrophication potential (terrestrial); POCP = photochemical ozone formation; ADPE = abiotic depletion potential (element); ADPF = abiotic depletion potential (fossil); WDP = water scarcity.							

\*Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator. We discourage the use of the results of modules A1-A3 without considering the results of module C.

### Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-GHG*	kg CO <sub>2</sub> eq.	2.53E+00	-1.35E-02	0.00E+00	4.73E-03	2.38E-04	0.00E+00	-2.03E-03
Acronyms	GWP - GHG* = global warming potential (greenhouse gases) This indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide emissions and uptake and biogenic carbon stored in the product with characterization factors (CFs) based on IPCC (2013)							

## Resource use indicators

Results for 1 kg of GFRP Rebar, Dowels, Rockbolts and Form Ties								
Impact indicators	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	MJ	4.72E+00	-1.11E-01	0.00E+00	1.07E-04	5.27E-03	0.00E+00	-9.96E-03
PERM	MJ	1.23E-01	-1.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	4.85E+00	-2.34E-01	0.00E+00	1.07E-04	5.27E-03	0.00E+00	-9.96E-03
PENRE	MJ	3.66E+01	-1.93E-01	0.00E+00	6.83E-02	3.42E+00	0.00E+00	-3.23E-02
PENRM	MJ	3.42E+00	0.00E+00	0.00E+00	0.00E+00	-3.42E+00	0.00E+00	0.00E+00
PENRT	MJ	4.00E+01	-1.93E-01	0.00E+00	6.83E-02	3.09E-03	0.00E+00	-3.23E-02
SM	kg	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
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	1.22E-02	-2.76E-04	0.00E+00	1.57E-07	9.74E-06	0.00E+00	-9.29E-06
Acronyms	<b>Caption:</b> PERE = Use of renewable primary energy excluding the renewable primary energy resource used as raw materials; PERM = Use of renewable primary energy as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding the non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy 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							

## Waste and Output flows indicators

Results for 1 kg of GFRP Rebar, Dowels, Rockbolts and Form Ties								
Impact indicators	Unit	A1-A3	A5	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	1.58E-09	-3.17E-12	0.00E+00	4.24E-14	-1.26E-13	0.00E+00	7.94E-13
Non-hazardous waste disposed (NHWD)	kg	1.76E-01	1.51E-03	0.00E+00	7.72E-07	6.24E-07	0.00E+00	-4.29E-02
Radioactive waste disposed (RWD)	kg	3.50E-04	8.79E-07	0.00E+00	2.11E-09	4.99E-10	0.00E+00	-2.20E-06
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for Recycling (MFR)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
Material for Energy Recovery (MER)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported electrical energy (EEE)	MJ	0.00E+00	8.85E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported thermal energy (EET)	MJ	0.00E+00	1.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acronyms	<b>Caption:</b> HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy							

## Additional Environmental Impact Indicators

Results for 1 kg of GFRP Rebar, Dowels, Rockbolts & Form Ties								
Impact indicators	Unit	A1-A3	A5	C1	C2	C3	C4	D
Particulate matter	Disease incidences	1.90E-07	-1.47E-10	0.00E+00	4.46E-11	2.06E-11	0.00E+00	-6.13E-10
Ionising radiation, human health	kBq U235 eq.	3.11E-02	1.41E-04	0.00E+00	2.15E-07	6.61E-08	0.00E+00	-3.60E-04
Ecotoxicity, freshwater	CTUe	1.39E+01	-7.48E-01	0.00E+00	1.60E-02	1.72E-02	0.00E+00	-1.57E-02
Human toxicity, cancer	CTUh	6.35E-10	-2.05E-12	0.00E+00	2.65E-13	5.21E-14	0.00E+00	-1.30E-12
Human toxicity, non-cancer	CTUh	3.56E-08	3.27E-11	0.00E+00	5.74E-12	2.28E-13	0.00E+00	-1.14E-10
Land Use	Pt	1.11E+01	-1.67E-02	0.00E+00	5.88E-05	4.76E-04	0.00E+00	-7.79E-03
Acronyms	<b>Caption:</b> PM = Particulate matter emissions; IR = Ionising radiation, human health; ETF= Eco-toxicity (freshwater); HTP-c = Human toxicity, cancer effects; HTP-nc = Human toxicity, non-cancer effects; SQP = Soil quality potential/Land use related impacts							

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