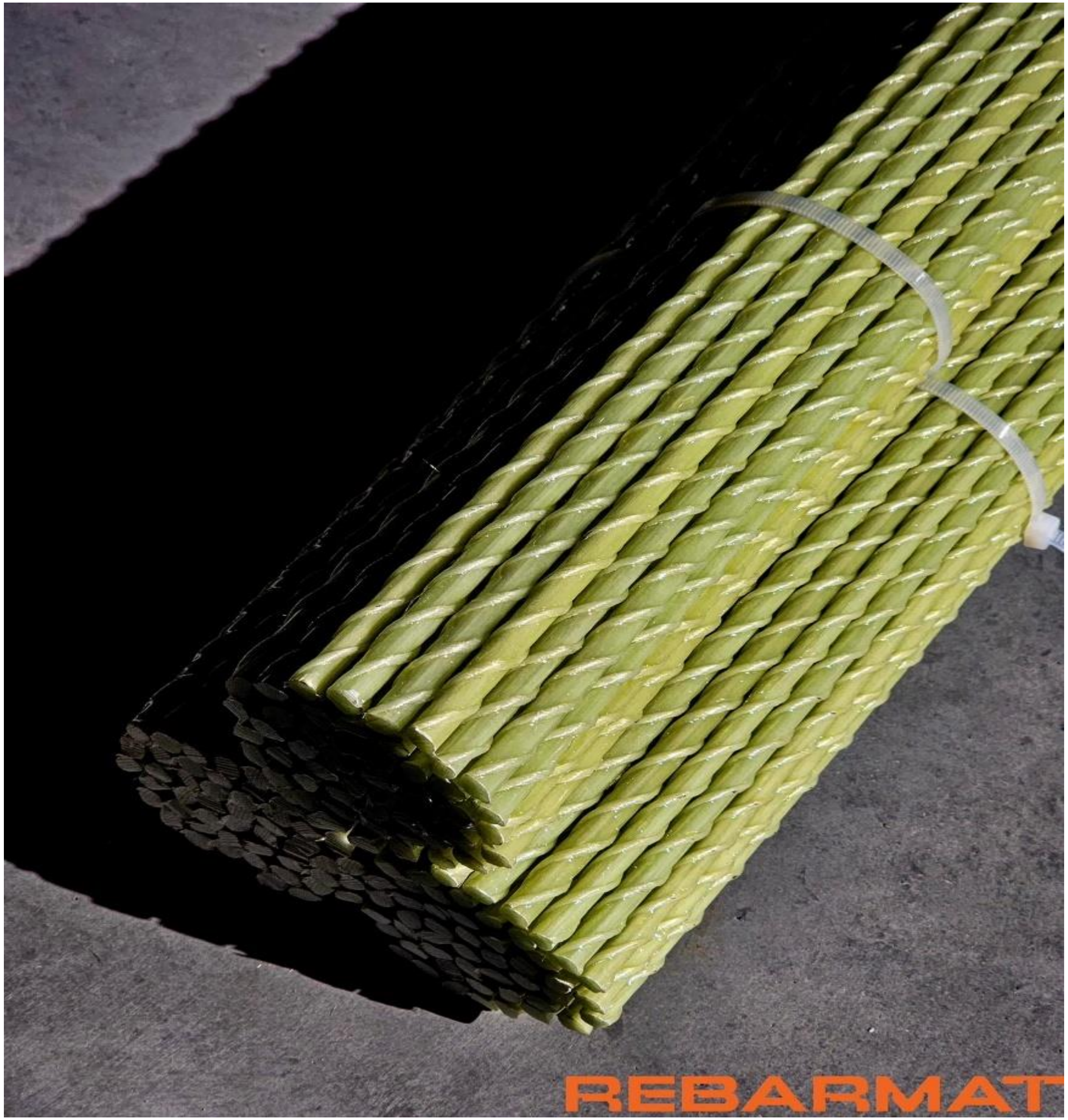
Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2

REBARMAT® GFRP Rebars and Mesh



Registration number:	EPD-Kiwa-EE-000447-EN
Issue date:	11-08-2025
Valid until:	11-08-2030
Declaration owner:	HMP Group Ltd
Publisher:	Kiwa-Ecobility Experts
Program operator:	Kiwa-Ecobility Experts
Status:	Verified

1 General information

1.1 PRODUCT

REBARMAT® GFRP PRO (rebars) and MESH (grid structures)

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-000447-EN

1.3 VALIDITY

Issue date: 11-08-2025

Valid until: 11-08-2030

1.4 PROGRAM OPERATOR

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1.5 DETAILS OF THE DECLARATION OWNER

Declaration owner: HMP Group Ltd

Address: Priežmalas iela 8, Kadaga, Ādažu pag., Ādažu nov., LV-2103, Latvia

E-mail: alise@rebarmat.com

Website: https://rebarmat.com/

Production location: “Vecozoli K-4”, Zakumuiza, Ropazu novads, LV-2133, Latvia

Address production location: “Vecozoli K-4”, Zakumuiza, Ropazu novads, LV-2133, Latvia

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804:2012+A2:2019 serves as the core PCR.

☐ Internal × External

Lucas Pedro Berman

(Third party verifier)

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The program operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-EE GPI R.3.0 (2025)

Kiwa-EE GPI R.3.0 Annex B1 (2025)

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPDs programs may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2 (5.3 Comparability of EPD for construction products) and ISO 14025 (6.7.2 Requirements for comparability).

1.10 CALCULATION BASIS

LCA method: EN 15804+A2

LCA software: Sphera LCA for Experts version 10.7.1.28.

Characterization method: EN 15804 +A2 Method v3.1

LCA database profiles: Sphera Managed LCA Content version 2023.2 and

ecoinvent version 3.9.1.

1.11 PROJECT REPORT

This EPD is generated on the basis of the following report: LCA Report HMP Group Ltd, 09.08.2025.

2 Product

2.1 PRODUCT DESCRIPTION

REBARMAT® GFRP PRO (rebars) and MESH (grid structures) are high-performance composite reinforcement made from glass fiber reinforced polymer (GFRP). They offer exceptional strength, corrosion resistance, and lightweight properties, making them an ideal alternative to traditional steel reinforcement in concrete structures. Designed for durability and mechanical stability, REBARMAT® GFRP Rebars and Mesh enhance the longevity and performance of infrastructure in harsh environments. These high-performance bars are equipped with exceptional properties that make them ideal for such demanding applications.

UN CPC code: 36929

Product specification

The composition of the product is described in the following table:

Materials	Weight [m-%]
Glass Fibre	85
Epoxy Resin	15
Total	100

Packaging information is provided in the following table:

Packaging materials	Weight versus the product [m-%]
Wooden pallets	0.29
Plastic film	0.10
Plastic ties	0.02

2.2 APPLICATION (INTENDED USE OF THE PRODUCT)

REBARMAT® GFRP PRO Rebars and Mesh are intended for use as structural reinforcement in concrete applications where high strength, corrosion resistance, and reduced weight are critical. Typical uses include foundations, slabs, retaining walls, bridge decks, tunnels, marine and hydrotechnical structures, precast elements, and infrastructure in chemically aggressive or high-moisture environments. They are especially suited for projects requiring long-term durability and minimal maintenance.

REBARMAT® PRO (rebars)

An excellent alternative to metal rebars: sturdy, robust, and lightweight.

REBARMAT® MESH (grid structures)

Rebarmat composite mesh is an innovative alternative to traditional A/B class steel construction mesh

Fields of the application

The products are suitable for use in civil construction, road construction, hydrotechnical projects, precast technologies, and the agricultural industry.

Product-related or management system-related certifications

ISO 9001 Certificate, ETA 23/1022, Carbon Footprint Ltd (CO2e assessed organisation) Certificate.

2.3 REFERENCE SERVICE LIFE (RSL)

RSL PRODUCT

The generic life cycle of the products is assumed to be 50 years, with the product's service life determined by the Reference Service Life (RSL) of the structure or building in which it is used. It should be noted that the Use stage, including modules B1 to B7, is not declared.

USED RSL (YR) IN THIS CALCULATION

Designed for a lifespan of up to 100 years

2.4 TECHNICAL DATA

Detailed technical information about the product, including specifications, performance characteristics, and recommended applications, is submitted upon request.

2.5 SUBSTANCES OF VERY HIGH CONCERN

The products do not contain any substances from the “Candidate List of Substances of Very High Concern” (SVHC) in amounts greater than 0.1% (1.000 ppm).

2.6 DESCRIPTION PRODUCTION PROCESS

The production process of Glass Fiber Reinforced Polymer (GFRP) rebar and mesh for internal reinforcement of concrete structures involves a series of precisely controlled steps to ensure structural integrity, consistency, and product quality.

The key stages of the production route include:

Fiber Preparation: Continuous glass fibers are unwound from spools and aligned into the required configuration. These fibers serve as the core structural component of the reinforcement.

Resin Impregnation: The aligned fibers are passed through a resin bath, where they are thoroughly impregnated with the thermosetting matrix. Additives may be included to enhance durability, UV resistance, or bond performance.

Pulling and Forming: The resin-impregnated fibers are pulled through a heated die or mold to form the desired shape and dimensions. In this stage, the composite material begins to cure and take on its final structural characteristics.

Curing: The shaped GFRP elements undergo thermal curing to fully harden the resin matrix, ensuring mechanical strength and long-term durability.

Surface Treatment (if applicable): To improve the bond with concrete, surface texturing (e.g., sand coating) may be applied during or after the forming stage.

Cutting and Finishing: Once cured, the rebar or mesh is cut to specified lengths. Final inspections and quality checks are performed to ensure compliance with performance and dimensional standards.

Packaging and Storage: The finished products are packaged, labelled, and stored under controlled conditions to maintain their properties during handling and transportation.

This process is optimized to minimize material waste and ensure repeatability and high performance of the GFRP reinforcement products.

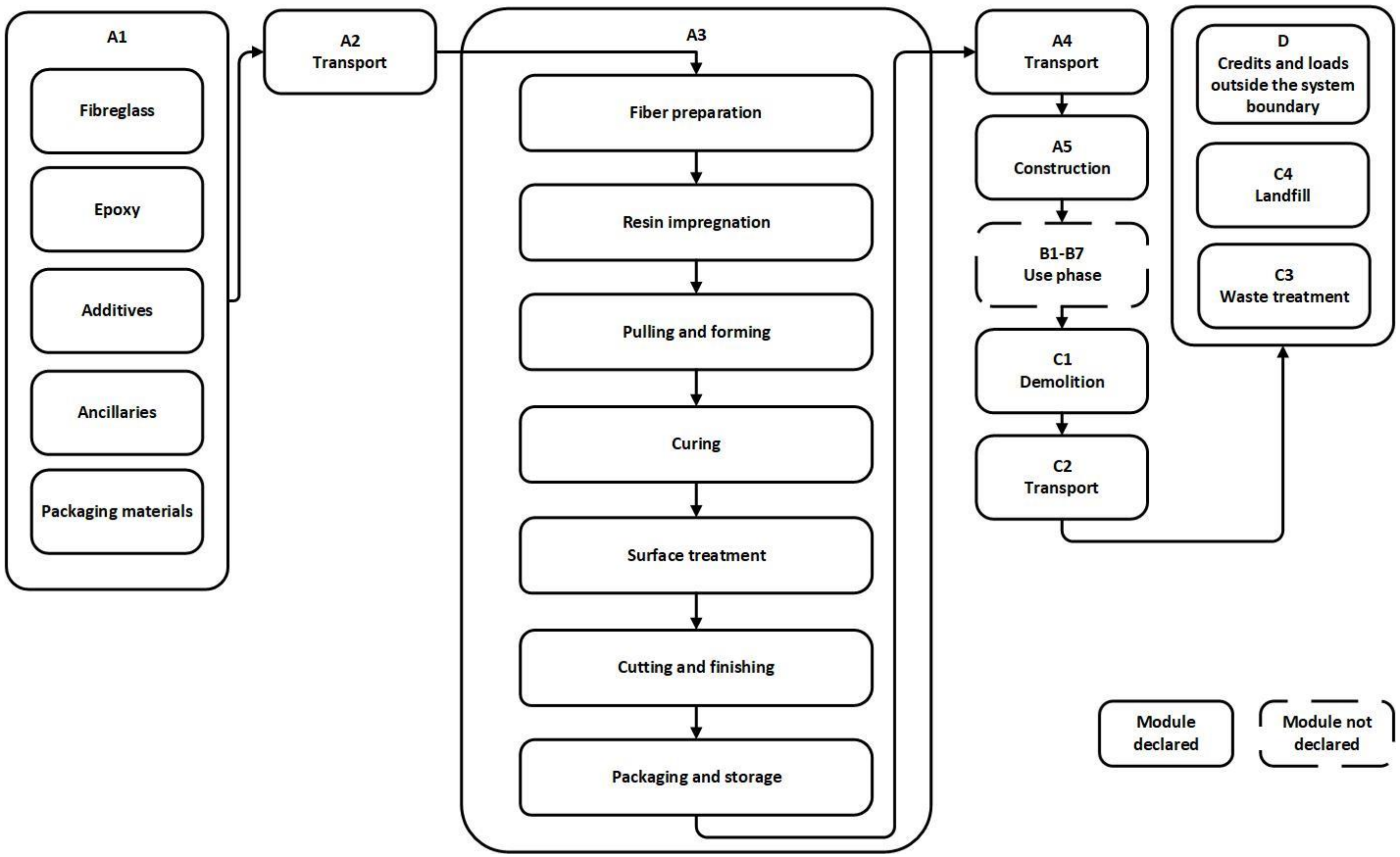

Figure 1: Graphic schematic process flow diagram of the production process

3 Calculation rules

3.1 DECLARED UNIT

1 kg of REBARMAT® GFRP reinforcement products

3.2 CONVERSION FACTORS

To ensure the comparability of LCA data with practical construction use of REBARMAT® GFRP products, the table below provides typical conversion factors from product mass (in kilograms) to functional units – linear and square meters.

These values are based on the most commonly used product configurations in engineering and construction practice.

The conversion of kilogram to liner meter of REBARMAT® PRO (rebar) is provided below:

Diameter (mm)	Weight (kg/m)	Linear Meters per 1 kg
4	0.045	22.075
5	0.059	17.082
6	0.066	15.085
7	0.91	10.98
8	0.113	8.873
10	0.172	5.807
12	0.242	4.129
16	0.345	2.899
25	0.9	1.111

The conversion of kilogram to liner meter of REBARMAT® MESH is provided below:

Diameter (mm)	Cell size	Weight (kg/m2)	m2 per 1 kg
2	50x50	0.245	4.082
2	100x100	0.125	8
3	50x50	0.49	2.041
3	100x100	0.25	4
4	50x50	0.93	1.075
4	100x100	0.47	2.128
4	150x150	0.35	2.857

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

The life cycle stages included in the assessment are A1-A3, A4-A5, C1-C4, and D. The scope of the EPD generated corresponds to the so-called cradle-to-gate with options.

The modularity principle is applied to ensure that each life cycle stage is assessed and reported independently, allowing results to be combined without double-counting.

The life cycle stages included are as shown below:

(X = module declared, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN 15804+A2 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for the main product variants offered under the REBARMAT® GFRP brand, including different diameters, mesh sizes, and configurations (the study is based on an average product approach). A declared unit of 1 kg was selected to ensure comparability across product types. Conversion factors to functional units (e.g., meters of rebar or square meters of mesh) are provided to support interpretation.

The results of this EPD are representative for European Union.

3.5 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. Personnel-related impacts, such as transportation to and from work, as well research and development activities has not been considered.

3.6 ALLOCATION

The allocation is performed in accordance with the provisions of EN 15804. Incoming energy, water, and in-house waste production are equally allocated among all products using a power output allocation method. For the end-of-life allocation of background data (energy and materials), the "allocation cut-off by classification" model, as specified in the ISO standard, is applied. Specific details regarding allocations within the background data can be found in the documentation of the datasets.

3.7 DATA COLLECTION & REFERENCE TIME PERIOD

Primary data including all raw materials, packaging materials, energy consumption and ancillary materials was comprehensively collected for the reference year from 2024-01-01 to 2024-12-31.

3.8 ESTIMATES AND ASSUMPTIONS

The LCA of REBARMAT® GFRP reinforcement products is based primarily on specific data collected from the production site of HMP Group Ltd for the reference year 2024. In cases where exact measurements or site-specific data were not available, reasonable estimates and conservative assumptions were applied in accordance with the requirements of EN 15804 and the principles outlined in ISO 14040, ISO 14044, and ISO 14025.

Key assumptions and estimates include:

• Transport distances for raw materials were estimated based on average supplier locations and logistics records. When precise data were unavailable, typical transport distances within Latvia and neighbouring EU countries were assumed.

• End-of-life scenarios were modelled according to generic European waste treatment practices in the absence of specific disposal data for GFRP materials. Mechanical recycling was assumed not to be feasible for most products, and incineration with energy recovery was considered for polymer components. The scenarios included are currently in use and are representative for one of the most likely scenario alternatives.

• Packaging material quantities (wooden pallets, stretch film, and plastic ties) were estimated based on average packaging used per kg of product, verified through production staff interviews and dispatch documentation.

• Electricity emission factor (0.319 kg CO_2e/kWh) was calculated as a weighted average based on 2024 monitoring data from on-site photovoltaic systems and the national electricity grid, assuming consistent grid mix throughout the year.

• Auxiliary materials (e.g., lubricants, cleaning agents) were excluded from the system boundaries due to their low mass contribution (<1%) and negligible environmental impact, in line with EN 15804 cut-off criteria.

• Additives and catalysts: for enhanced curing and durability were excluded from the system boundaries due to their low mass contribution (<1%) and negligible environmental impact, and the absence of a suitable dataset, it is excluded from the LCA calculation, in line with EN 15804 cut-off criteria.

• Infrastructure and capital goods (e.g., machinery, buildings) were excluded from the study in accordance with standard practice for cradle-to-gate LCA and per EN 15804 guidance.

All assumptions are documented transparently and, where applicable, sensitivity analyses were performed to evaluate their potential impact on the overall results.

3.9 DATA QUALITY

All relevant process data was collected through an operational data survey. The data concerning the production stage of the product was provided by HMP Group Ltd and corresponds specifically to the manufacturing site located at “Vecozoli K-4”, Zakumuiza, Ropažu novads, LV-2133, Latvia.

Data for processes that are beyond the direct control of the manufacturer (e.g., upstream supply chain processes, transport, energy mix) were sourced from established and recognized background databases.

The data utilized in this EPD is of good overall quality, with:

Geographical representativeness: Very good, as the data reflects the actual site and country of production.

Technical representativeness: Good, with the applied processes accurately representing the technology used.

Temporal representativeness: Good, referring to data aligned with the reference period of assessment. The data reflect the situation during the 2024 calendar year, and the processes included are current and valid for the present product system. It is assumed that the background data from secondary sources (e.g., Ecoinvent, GaBi, or other LCI databases) are from the most recent and reliable versions available at the time of the study.

Data quality was evaluated in accordance with the Product Environmental Footprint (PEF) approach, using criteria defined in Annex E.2 of EN 15804+A2.

In conclusion, the dataset applied throughout the assessment is consistent and robust across all life cycle stages, meeting the criteria for good data quality.

3.10 POWER MIX

Production site uses a hybrid energy model. As of 2024, approximately 42% of electricity used in production is generated from on-site photovoltaic systems, with the remained from the Latvian electricity grid. This mix results in a combined electricity emission factor of 0.319 kg CO_2e/kWh, calculated based on a weighted average derived from:

• monitoring data from the on-site solar PV system (including annual electricity output and equipment specifications), and

• official data from the electricity provider in Latvia regarding the grid electricity mix and its associated emissions.

The process model for solar electricity used is "1kWh Electricity, low voltage {NL}| market for 100% Photovoltaic", with a global warming potential (GWP) of 0.132 kg CO_2 eq. Per kWh, sourced from the Ecoinvent database version 3.9.1.

The process model for grid mix used is "1kWh Electricity, low voltage {LV}| electricity, low voltage, residual mix | Cut-off, U", with a global warming potential (GWP) of 0.454 kg CO_2 eq. Per kWh, sourced from the Ecoinvent database version 3.9.1.

The residual mix is calculated using the domestic residual mix, which accounts for total domestic electricity production, including imports and exports beyond the calculation area, as well as issued and expired energy attribute certificates. The calculation is based on statistics from AIB (2022) and follows the methodology developed by Grexel (2020).

4 Scenarios and additional technical information

4.1 RAW MATERIAL SUPPLY (A1)

Production starts with raw materials. Raw material stage includes raw material extraction/preparation and pre-treatment processes before production.

4.2 TRANSPORT (A2)

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant.

4.3 MANUFACTURING (A3)

The production stage covers all material, energy, and waste flows directly associated with the manufacturing processes of glass fibre reinforcement products. Activities not directly related to production – such as energy and water use for company administration or sales functions – are excluded where technically feasible. Additionally, the production and construction of capital goods, infrastructure, and other indirect processes are outside the system boundary.

All raw materials used in the products have been identified and quantified in accordance with the allocation and cut-off criteria defined in the applicable standards. Material inputs are assigned based on their actual mass contributions to the declared unit. Production-specific energy consumption was measured and reported by HMP Group Ltd, reflecting the energy used exclusively for manufacturing activities. Information on transportation modes and distances from raw material suppliers was also provided by HMP Group Ltd.

Production data has been recorded with a high degree of accuracy and consistency. Due to the standardized nature of operations at the manufacturing site, energy usage, ancillary materials, and waste outputs have been proportionally allocated to the declared unit based on annual production and consumption figures across a representative 12-month reference period. Waste generated during the manufacturing process is handled in an environmentally responsible manner – stored in appropriate containers and regularly transported to authorized facilities for treatment or disposal. As such, no significant adverse environmental impacts from on-site waste handling are anticipated.

4.4 TRANSPORT (A4)

This stage covers transportation from the production stockyard to the construction site where the product will be installed. The transport scenario, as provided by HMP Group Ltd., accounts for delivery to a construction site located in Amsterdam, the Netherlands. The scenario includes two transport modes: road transport by lorry (16–32 tonnes, EURO 6) over a distance of 112 km, and sea transport by transoceanic freight ship (containerized) over 1,600 km. No product losses are assumed during transport, as the goods are properly secured. The alternative transport scenarios and their corresponding results are discussed in Section 6: Interpretation of Results.

4.5 ASSEMBLY (A5)

During installation, the rebars are cut to length on-site using electric saws. Energy consumption is modelled at 0.02 kWh per kilogram of product installed. Waste is estimated at 1% per declared unit (DU). Manual handling is applied, and no auxiliary installation materials are required. Emissions from cutting and shaping are negligible and therefore not included in module A5. Impacts of accompanying packing is included in this module. Packaging waste (wooden pallets, stretch film, and labels) is either recycled or incinerated in accordance with local waste management practices.

4.6 DE-CONSTRUCTION, DEMOLITION (C1)

It is assumed that the concrete elements containing REBARMAT will be demolished using standard equipment (e.g., hydraulic breaker). Energy use for demolition is estimated at 0,01 kWh per kg of waste or 0,001009 l (diesel). No manual separation of rebars is expected.

4.7 TRANSPORT END-OF-LIFE (C2)

During the End-of-Life phase 99% of the fiberglass rebar material is crushed and reused as fine aggregate in concrete on the same site (it is not dismantled, separated or manipulated by any means), while !% is landfilled. All of end-of-life product is assumed to be sent to the closest facilities (C2).

4.8 END OF LIFE (C3, C4)

The waste treatment of primary raw materials is modelled as follows: epoxy resin, hardener, glass fiber, and pigments remain embedded in the concrete matrix and are mechanically crushed during the demolition phase. No manual separation is conducted. It is assumed that no manual separation of the reinforcement from the concrete matrix is performed. Instead, the material is processed together with the concrete waste and crushed to an appropriate granularity. A recycling rate of 99% is assumed for the waste generated. The resulting mixed granulate is then reused, typically as a secondary aggregate or filler material.

Some waste streams are not suitable for reprocessing or energy recovery and are therefore subject to final disposal. This occurs when materials are landfilled and/or when the product remains in place and is not removed at the end of its service life. The following amounts correspond to each final disposal stream applicable to the product.

For REBARMAT® GFRP reinforcement, a conservative assumption is applied whereby 1% of the material is considered to be landfilled.

4.9 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

Due to the recycling potential of concrete structures, the end-of-life product is mainly converted into recycled raw materials (Module D). Loads and benefits of recycling are part of module D. The benefits are calculated based on the primary content and the primary equivalent.

According to the requirements of EN 15804 and in alignment with ISO 14040 and ISO 14044, the End of Waste Point refers to the stage at which a material, previously considered waste, ceases to be waste and becomes a resource with a specific use or function.

For REBARMAT® GFRP reinforcement, the following considerations apply:

• Embedded Material Context: GFRP (Glass Fiber Reinforced Polymer) remains embedded in the concrete structure throughout its service life and is not separated manually during demolition (C1). Therefore, the composite material as a whole, including the reinforcement, is treated as a mixed waste during waste processing (C3).

• Waste Processing Outcome: The demolished concrete – including embedded GFRP – is mechanically crushed into granulate and reused, typically as a secondary material (e.g., backfill or sub-base in road construction). Due to the presence of non-reactive thermoset resin, no further transformation into a standardized, regulated secondary product occurs.

• End-of-Waste Criteria Not Met: Based on current technological and regulatory limitations, the crushed material containing GFRP does not meet the European Commission's criteria for End-of-Waste status under the Waste Framework Directive (Directive 2008/98/EC). This is primarily because:

• There is no recognized standard or specification for the recovered material.

• The granulate cannot be considered a product or resource with a consistent and intended function.

• It lacks a regulated quality control process or widespread market use.

Conclusion: As a result, the end-of-waste point is not reached for REBARMAT® GFRP materials at any stage of the end-of-life phase. All downstream burdens related to disposal, reuse, or material losses remain within the system boundaries of the LCA and are accounted for in Modules C3 and C4.

This approach ensures conservative modelling and reflects the current waste management practices for GFRP-based composite products in the construction industry.

Therefore, producers of waste bear the burden of the waste treatment, based on the “polluter pays” principle, while consumers of recycled products receive them burden-free. The polluter pays principle ensures that environmental burdens are assigned to the stage where they occur.

In general, inputs and outputs are attributed to the specific process or module in which they occur, in accordance with the modularity principle. Specifically:

Environmental impacts from manufacturing or production-related waste (including transport, incineration, processing, landfill, and any associated recovery benefits) are allocated to **Module A3**.

Environmental impacts occurring during the end-of-life stage are assigned as follows: **C2** for transport, **C3** for waste processing, and **Module D** for benefits from material or energy recovery.

5 Results

For the impact assessment, the characterization factors of the LCIA method EN 15804 +A2 Method v3.1 are used. Long-term emissions (>100 years) are not considered in the impact assessment. The results of the impact assessment are only relative statements that do not make any statements about endpoints of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER [1 kg]

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
AP	mol H^+ eqv.	1,71E-02	2,15E-03	2,20E-03	2,15E-02	9,60E-05	2,70E-04	3,32E-05	3,59E-05	9,29E-06	4,58E-07	-1,25E-04
GWP-total	kg CO_2 eqv.	2,58E+00	1,28E-01	2,67E-01	2,97E+00	4,40E-02	1,45E-01	3,59E-03	7,52E-03	1,47E-03	6,08E-05	-8,71E-03
GWP-b	kg CO_2 eqv.	5,27E-03	3,28E-05	-9,87E-02	-9,34E-02	1,42E-05	1,01E-01	4,98E-07	2,44E-06	1,34E-06	2,65E-08	-4,11E-05
GWP-f	kg CO_2 eqv.	2,57E+00	1,28E-01	3,66E-01	3,07E+00	4,39E-02	4,48E-02	3,58E-03	7,50E-03	1,47E-03	6,08E-05	-8,64E-03
GWP-luluc	kg CO_2 eqv.	2,38E-03	8,20E-05	2,43E-04	2,71E-03	2,17E-05	3,60E-05	4,03E-07	2,67E-05	3,32E-07	3,67E-08	-3,35E-05
EP-m	kg N eqv.	3,26E-03	5,36E-04	7,60E-04	4,56E-03	2,36E-05	6,31E-05	1,54E-05	1,36E-05	3,94E-06	1,75E-07	-3,67E-05
EP-fw	kg P eqv.	8,84E-05	7,56E-07	7,23E-06	9,63E-05	3,57E-07	1,39E-06	1,29E-08	7,46E-08	2,91E-08	5,93E-10	-6,19E-07
EP-T	mol N eqv.	3,61E-02	5,92E-03	8,36E-03	5,03E-02	2,46E-04	7,09E-04	1,67E-04	1,45E-04	4,31E-05	1,88E-06	-5,65E-04
ODP	kg CFC 11 eqv.	1,44E-07	2,33E-09	1,12E-08	1,57E-07	9,56E-10	2,01E-09	5,70E-11	1,33E-10	3,31E-11	1,76E-12	-5,43E-10
POCP	kg NMVOC eqv	1,19E-02	1,71E-03	2,60E-03	1,62E-02	1,49E-04	2,19E-04	4,96E-05	4,97E-05	1,28E-05	6,56E-07	-1,13E-04
ADP-f	MJ	4,29E+01	1,68E+00	4,52E+00	4,91E+01	6,24E-01	6,46E-01	4,69E-02	1,07E-01	2,01E-02	1,51E-03	-1,13E-01
ADP-mm	kg Sb-eqv.	2,54E-04	2,62E-07	9,42E-06	2,64E-04	1,44E-07	2,75E-06	1,25E-09	2,35E-08	5,96E-09	8,44E-11	-2,86E-08
WDP	m^3 world eqv.	9,16E-01	5,38E-03	6,31E-02	9,84E-01	2,57E-03	1,18E-02	1,01E-04	5,86E-04	1,11E-04	6,69E-05	-6,06E-02

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
ETP-fw	CTUe	3,52E+01	8,32E-01	2,94E+00	3,90E+01	3,08E-01	4,70E-01	2,24E-02	7,92E-02	6,77E-03	7,11E-04	-5,24E-02
PM	Disease incidence	1,16E-07	6,44E-09	4,22E-08	1,64E-07	3,26E-09	2,12E-09	9,26E-10	7,40E-10	2,25E-10	1,00E-11	-1,89E-09
HTP-c	CTUh	2,74E-09	5,67E-11	3,07E-10	3,10E-09	2,00E-11	5,10E-11	1,10E-12	3,97E-12	4,70E-13	3,00E-14	-1,28E-11
HTP-nc	CTUh	1,22E-07	8,45E-10	6,08E-09	1,29E-07	4,43E-10	1,49E-09	7,63E-12	8,62E-11	9,39E-12	3,20E-13	-3,11E-10
IR	kBq U-235 eqv.	1,28E-01	6,05E-04	7,92E-03	1,37E-01	3,16E-04	1,45E-03	9,60E-06	4,19E-05	2,30E-05	4,00E-07	-1,91E-04
SQP	Pt	6,57E+00	5,77E-01	1,02E+01	1,73E+01	3,77E-01	3,19E-01	3,16E-03	8,47E-02	2,71E-03	3,01E-03	-2,11E+00

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2

Disclaimer 1 – 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.

Disclaimer 2 – 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.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	3,21E+00	1,93E-02	1,60E+00	4,83E+00	9,80E-03	9,84E-02	2,67E-04	1,52E-03	1,68E-03	1,28E-05	-4,85E-01
PERM	MJ	0,00E+00	0,00E+00	8,39E-01	8,39E-01	0,00E+00	8,39E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	3,21E+00	1,93E-02	2,44E+00	5,67E+00	9,80E-03	1,07E-01	2,67E-04	1,52E-03	1,68E-03	1,28E-05	-4,85E-01
PENRE	MJ	3,83E+01	1,68E+00	4,35E+00	4,43E+01	6,24E-01	5,98E-01	4,69E-02	1,08E-01	2,01E-02	1,51E-03	-1,12E-01
PENRM	MJ	4,62E+00	0,00E+00	1,69E-01	4,79E+00	0,00E+00	4,79E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,44E-03
PENRT	MJ	4,29E+01	1,68E+00	4,52E+00	4,91E+01	6,24E-01	6,46E-01	4,69E-02	1,08E-01	2,01E-02	1,51E-03	-1,13E-01
SM	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	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	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	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,65E-02	1,90E-04	1,93E-03	2,86E-02	8,98E-05	4,15E-04	3,69E-06	2,59E-05	5,56E-06	1,61E-06	-1,42E-03

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	1,04E-04	9,54E-06	2,53E-05	1,39E-04	3,97E-06	2,18E-06	3,16E-07	6,85E-07	1,04E-07	8,02E-09	-5,09E-07
NHWD	kg	2,96E-01	4,45E-02	5,78E-02	3,98E-01	3,10E-02	6,50E-02	6,72E-05	7,10E-03	3,02E-03	1,00E-02	-1,78E-03
RWD	kg	1,00E-04	3,71E-07	6,02E-06	1,07E-04	2,05E-07	1,13E-06	5,14E-09	2,46E-08	1,94E-08	2,24E-10	-1,29E-07

HWD=hazardous waste disposed **|** **NHWD**=non-hazardous waste disposed **|** **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	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	0,00E+00	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,30E-02	0,00E+00	0,00E+00	9,90E-01	0,00E+00	0,00E+00
MER	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	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	3,05E-02	3,05E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,36E-01
EEE	MJ	0,00E+00	0,00E+00	1,77E-02	1,77E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,37E-01

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER KILOGRAM

BIOGENIC CARBON CONTENT

The following information describes the biogenic carbon content in (the main parts of) the product at the factory gate per kilogram:

Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	0	kg C
Biogenic carbon content in accompanying packaging	0.02727	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount carbon dioxide uptake is taken into account. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

Uptake biogenic carbon dioxide	Amount	Unit
Product	0	kg CO_2 (biogenic)
Packaging	0.1	kg CO_2 (biogenic)

6 Interpretation of results

6.1 Alternative transport scenarios and corresponding results (A4)

Module A4 includes transportation from the production warehouse to the construction site where the prefabricated product will be installed. Two additional delivery scenarios were calculated with the parameters described in the following tables.

Transportation A4 scenario – Stockholm, Sweden

Mode	Vehicle type	Distance
Road	Lorry (Truck) 16-32t, EURO6 *	271 km
Maritime	Ferry/ Transoceanic freight ship, containers	350 km

* Data for transport is calculated for an average load factor, including empty return trips.

Transportation A4 scenario – Milan, Italy

Mode	Vehicle type	Distance
Road	Lorry (Truck) 16-32t, EURO6 *	2212 km

* Data for transport is calculated for an average load factor, including empty return trips.

CORE ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	Stockholm, Sweden	Milan, Italy
AP	mol H^+ eqv.	2,29E-04	9,48E-04
GWP-total	kg CO_2 eqv.	5,69E-02	4,34E-01
GWP-b	kg CO_2 eqv.	1,79E-05	1,40E-04
GWP-f	kg CO_2 eqv.	5,69E-02	4,34E-01
GWP-luluc	kg CO_2 eqv.	2,91E-05	2,14E-04
EP-m	kg N eqv.	5,66E-05	2,33E-04
EP-fw	kg P eqv.	4,47E-07	3,52E-06
EP-T	mol N eqv.	6,08E-04	2,43E-03
ODP	kg CFC 11 eqv.	1,21E-09	9,44E-09
POCP	kg NMVOC eqv	2,64E-04	1,47E-03
ADP-f	MJ	8,01E-01	6,16E+00
ADP-mm	kg Sb-eqv.	1,77E-07	1,42E-06
WDP	m^3 world eqv.	3,21E-03	2,54E-02

AP=Acidification (AP) | **GWP-total**=Global warming potential (GWP-total) | **GWP-b**=Global warming potential - Biogenic (GWP-b) | **GWP-f**=Global warming potential - Fossil (GWP-f) | **GWP-luluc**=Global warming potential - Land use and land use change (GWP-luluc) | **EP-m**=Eutrophication marine (EP-m) | **EP-fw**=Eutrophication, freshwater (EP-fw) | **EP-T**=Eutrophication, terrestrial (EP-T) | **ODP**=Ozone depletion (ODP) | **POCP**=Photochemical ozone formation - human health (POCP) | **ADP-f**=Resource use, fossils (ADP-f) | **ADP-mm**=Resource use, minerals and metals (ADP-mm) | **WDP**=Water use (WDP)

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN15804+A2

Abbreviation	Unit	Stockholm, Sweden	Milan, Italy
ETP-fw	CTUe	3,96E-01	3,04E+00
PM	Disease incidence	4,05E-09	3,22E-08
HTP-c	CTUh	2,59E-11	1,98E-10
HTP-nc	CTUh	5,49E-10	4,37E-09
IR	kBq U-235 eqv.	3,92E-04	3,12E-03
SQP	Pt	4,60E-01	3,72E+00

ETP-fw=Ecotoxicity, freshwater (ETP-fw) | **PM**=Particulate Matter (PM) | **HTP-c**=Human toxicity, cancer (HTP-c) | **HTP-nc**=Human toxicity, non-cancer (HTP-nc) | **IR**=Ionising radiation, human health (IR) | **SQP**=Land use (SQP)

PARAMETERS DESCRIBING RESOURCE USE

Abbreviation	Unit	Stockholm, Sweden	Milan, Italy
PERE	MJ	1,22E-02	9,68E-02
PERM	MJ	0,00E+00	0,00E+00
PERT	MJ	1,22E-02	9,68E-02
PENRE	MJ	8,01E-01	6,16E+00
PENRM	MJ	0,00E+00	0,00E+00
PENRT	MJ	8,01E-01	6,16E+00
SM	kg	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00

FW	m^3	1,12E-04	8,87E-04

PERE=renewable primary energy ex. raw materials | **PERM**=renewable primary energy used as raw materials | **PERT**=renewable primary energy total | **PENRE**=non-renewable primary energy ex. raw materials | **PENRM**=non-renewable primary energy used as raw materials | **PENRT**=non-renewable primary energy total | **SM**=use of secondary material | **RSF**=use of renewable secondary fuels | **NRSF**=use of non-renewable secondary fuels | **FW**=use of net fresh water

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbreviation	Unit	Stockholm, Sweden	Milan, Italy
HWD	kg	5,03E-06	3,92E-05
NHWD	kg	3,76E-02	3,06E-01
RWD	kg	2,53E-07	2,03E-06

HWD=hazardous waste disposed | **NHWD**=non-hazardous waste disposed | **RWD**=radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbreviation	Unit	Stockholm, Sweden	Milan, Italy
CRU	kg	0,00E+00	0,00E+00
MFR	kg	0,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy Thermic | **EEE**=Exported Energy Electric

6.2 Contribution analysis of the raw materials (A1)

The A1 module (Raw Material Supply) encompasses the extraction and initial processing of all raw materials used in the production of REBARMAT® GFRP reinforcement. This stage is a key contributor to the overall environmental profile of the product, as it involves energy-intensive processes and the use of fossil-based inputs.

The primary raw materials for REBARMAT® GFRP include:

Glass fibers, which form the structural core of the reinforcement and require high-temperature melting and fiberization processes. This step is typically responsible for the largest share of greenhouse gas emissions, energy use, and resource depletion.

Thermosetting epoxy resin, derived from fossil sources, which contributes significantly to climate change potential (GWP) and cumulative energy demand due to its petrochemical origin and energy-intensive synthesis.

Additives and processing aids (e.g., curing agents, surface treatments), although used in smaller quantities, may contain hazardous substances and contribute to toxicity-related impact categories.

Based on the composition and environmental profiles of these materials, the largest share of impacts in module A1 is typically associated with:

Climate change (GWP-total), largely due to energy consumption in glass fiber production and fossil-based epoxy resin synthesis;

Abiotic resource depletion (fossil fuels) from petrochemical inputs;

Cumulative energy demand, both renewable and non-renewable.

In summary, the raw material supply stage (A1) dominates the product's life cycle impact, primarily due to the embodied energy and emissions associated with the production of glass fibers and thermosetting epoxy resin systems. Improvements in material selection or the use of alternative, lower-impact materials (e.g., bio-based resins or recycled fibers) could offer opportunities for environmental performance enhancement.

6.3 Contribution analysis of the inputs

This section evaluates the contribution of various input flows – materials, energy, and ancillary substances –used throughout the life cycle of REBARMAT® GFRP reinforcement, with a primary focus on modules A1–A3.

The most influential inputs include:

Glass fibers:

Serving as the main reinforcement material, glass fibers constitute the majority of the material input mass. Their manufacturing involves high-temperature melting of raw materials such as silica sand and alumina, which contributes significantly to environmental impacts –particularly in terms of global warming potential (GWP), cumulative energy demand, and abiotic depletion of non-renewable resources.

Epoxy resin (thermosetting polymer):

The matrix material used in REBARMAT® GFRP is epoxy resin, which is synthesized from petrochemical feedstocks. The production of epoxy resin is energy-intensive and contributes notably to the product’s environmental profile, especially in impact categories such as climate change, fossil resource use, and human toxicity. No vinyl ester resin is used in the production of REBARMAT® GFRP reinforcement.

Electricity consumption:

Electrical energy is used throughout various production stages, including fiber handling, resin mixing, and composite formation (e.g., pultrusion). The impact of electricity inputs is highly dependent on the local energy grid mix; regions relying on fossil-based energy sources exhibit higher emissions and environmental burdens.

Ancillary materials and packaging:

Inputs such as plastic filmand minor additives used during production and packaging may have relatively small mass shares, but can still contribute to impacts in categories such as resource use, waste generation, and eco-toxicity, especially if not recycled or managed sustainably.

Transportation fuels:

Transport of raw materials to the manufacturing site and distribution of finished products contribute to fossil fuel consumption and greenhouse gas emissions, especially when transport distances are long or heavy logistics are involved.

Conclusion:

The contribution analysis of input flows indicates that the primary environmental impacts of REBARMAT® GFRP reinforcement arise from the production of glass fibers and epoxy resin. Energy consumption during manufacturing is also a significant factor. Opportunities for improvement may include using lower-carbon electricity sources, optimizing resin formulation, and exploring potential for recycled content in packaging and raw materials.

6.4 Sensitivity analysis

The sensitivity analysis assesses how variations in key input parameters and assumptions influence the environmental performance results of the REBARMAT® GFRP reinforcement product system. This analysis supports the robustness and reliability of the Life Cycle Assessment (LCA) results and helps identify parameters that significantly affect impact indicators, guiding potential improvement opportunities.

Key aspects addressed in the sensitivity analysis include:

Raw Material Composition

The primary contributors to the environmental impacts in the A1 module are the glass fibers and epoxy resin. Sensitivity was evaluated by considering potential variations in the epoxy resin content and glass fiber production data, including alternative resin sources such as bio-based epoxy resins and the possible introduction of recycled glass fibers. These scenarios showed that replacing fossil-based epoxy resin with bio-based alternatives could reduce climate change potential (GWP) and cumulative energy demand by up to 10–15%. Similarly, increased recycled content in glass fibers may lower abiotic resource depletion and energy use, although data availability remains limited.

Energy Consumption Assumptions

Energy consumption data for raw material extraction and processing significantly influence the LCA outcomes, particularly in the A1 module. Sensitivity testing was performed by varying energy consumption values within ±15%, reflecting typical uncertainties in industry data. Results indicated a proportional change in greenhouse gas emissions and energy demand indicators, confirming that energy efficiency improvements in glass fiber melting and resin synthesis stages can effectively reduce overall impacts.

Additives and Auxiliary Materials

Due to their relatively low quantities, additives and processing aids have minor contributions to total environmental impacts. However, sensitivity tests on assumptions regarding the toxicity and hazardous substance content showed negligible effects on overall impact categories, consistent with the product’s formulation and usage data.

Data Quality and Source Variability

Given the use of generic secondary datasets for some raw materials and energy processes, sensitivity analysis was performed to account for dataset variability. The results confirm that while dataset choice can affect absolute impact values, the relative environmental profile and main impact drivers remain consistent.

Conclusion

The sensitivity analysis confirms that the LCA results for REBARMAT® GFRP reinforcement are robust within reasonable variation ranges of key input parameters. The dominance of glass fibers and epoxy resin production in the environmental profile highlights areas for targeted improvement, including substitution with lower-impact materials and process energy efficiency enhancements. These insights are aligned with the requirements of EN 15804+A2:2019 and related standards, providing a transparent basis for interpreting the environmental performance of REBARMAT® GFRP reinforcement.

7 Annex

Environmental Cost Indicator (ECI)

The Environmental Cost Indicator (ECI), also known as MilieuKostenIndicator (MKI) in the Netherlands, expresses the total monetized environmental burden of a product in euros per declared unit. It combines multiple environmental impact categories from the life cycle assessment (LCA) into a single value by applying shadow prices, which reflect the societal cost of preventing environmental damage.

This indicator enables transparent comparison of building products in public procurement and sustainable design, especially in countries like the Netherlands, Belgium, and across EU green public initiatives.

Methodology

The ECI values below are calculated based on:

- The EN 15804-compliant LCA results presented in this EPD (Modules A1–A3).
- The most recent shadow prices published by SBK (Stichting Bouwkwaliteit) – version 2024.
- Assumed contribution of environmental categories according to the SBK weighting system.
- Dominant contribution of Global Warming Potential (GWP) assumed to be ~70% of total ECI (estimated).

ECI Values for REBARMAT GFRP Reinforcement (A1–A3)		
Product Format	**Declared Unit**	**ECI Value (€ / unit)**
REBARMAT GFRP rebar and mesh	1 kg	€0.56

Notes

- These values are estimates based on EPD module A1–A3 only. Modules A5, C, and D are excluded.
- Shadow prices include the following midpoint categories:
  Global warming, acidification, eutrophication, particulate matter, photochemical ozone formation, toxicity, land use, water depletion, and resource depletion.
- Actual ECI may vary depending on national interpretation tools (e.g. MPG in the Netherlands, TOTEM in Belgium).

8 References

ISO 14040

ISO 14040:2006-10, Environmental management – Life cycle assessment – Principles and framework; EN ISO 14040:2006

ISO 14044

ISO 14044:2006-10, Environmental management – Life cycle assessment – Requirements and guidelines; EN ISO 14044:2006

ISO 14025

ISO 14025:2011-10, Environmental labels and declarations – Type III environmental declarations – Principles and procedures

EN 15804+A2

EN 15804+A2: 2019, Sustainability of construction works – Environmental Product Declarations – Core rules for the product category of construction products

Erlandsson, M., Pettersson D., 2015

Klimatpaverkan for byggnader medolika energiprestandaer. IVL Svenska Miljoinstitutet

Kiwa-EE GPI R.3.0 (2025)

Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1201_R.3.0 (03.06.2025)

Kiwa-EE GPI R.3.0 Annex B1 (2025)

Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930 , SOP EE 1203_R.3.0 (03.06.2025)

Background database

Sphera Managed LCA Content version 2023.2 and ecoinvent version 3.9.1.

JRC (2010). ILCD Handbook

General guide for Life Cycle Assessment – Detailed guidance. EUR 24708 EN (1st ed.). Luxembourg: Joint Research Centre

Stichting Bouwkwaliteit (SBK), 2023

Bepalingsmethode Milieuprestatie Bouwwerken, Version 1.0. Dutch National Environmental Database Foundation (Stichting NMD), Netherlands

Stichting National Environmental Database (NMD), 2025

Environmental Performance Assessment Method for Construction Works, Version 1.2, Netherlands

Stichting National Environmental Database (NMD), 2024

Default values for end-of-life processing scenarios associated with: Environmental Performance Assessment Method for Construction Works, Netherlands

Stichting Nationale Milieudatabase (NMD), 2024

Environmental Cost Indicator (ECI) Methodology and Weighting Factors, Netherlands

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