TERRAM®

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Geosynthetics you can trust

Standard Geotextiles

T700 - T1000 - T1500 - T2000 - T3000 - T4000 - T4500

ENVIRONMENTAL PRODUCT DECLARATION

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

Terram Nonwoven Geotextiles
FIBERWEB GEOSYNTHETICS LIMITED

EPD HUB, HUB-1772
Publishing date 09 August 2024, last updated on 09 August 2024, valid until 09 August 2029.

Created with One Click LCA

T1000

GENERAL INFORMATION

MANUFACTURER

Manufacturer	FIBERWEB GEOSYNTHETICS LIMITED
Address	Blackwater Trading Estate, The Causeway, Heybridge, Maldon Cm9 4Gg, United Kingdom
Contact details	info@terram.com
Website	https://terram.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules A4 & A5 C1-C4, D
EPD author	Alireza Imani
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	T1000
Additional labels	-
Product reference	-
Place of production	Maldon, United Kingdom
Period for data	Calendar year 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 square metre
Declared unit mass	0.107 kg
GWP-fossil, A1-A3 (kgCO2e)	2.95E-01
GWP-total, A1-A3 (kgCO2e)	2.71E-01
Secondary material, inputs (%)	1.31
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	1.74
Net fresh water use, A1-A3 (m3)	0

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PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Fiberweb Geosynthetics Ltd. is part of Magnera Corporation, a global producer of nonwoven fabrics for various end uses. Fiberweb owns the TERRAM brand name and manufacture range of geosynthetics products.

PRODUCT DESCRIPTION

Terram offers a comprehensive range of high-performance nonwoven geotextiles engineered to meet a variety of civil engineering and construction needs. Manufactured from premium polypropylene fibres, these geotextiles provide exceptional strength, durability, and resistance to environmental degradation. The nonwoven needle-punched construction delivers superior tensile, tear, and puncture resistance, while the 100% virgin polypropylene composition ensures long-lasting performance. Terram nonwoven geotextiles also feature high water permeability to allow for efficient drainage and filtration, as well as excellent chemical, biological, and UV resistance. Available in a wide selection of weights, roll sizes, and specialized grades, the Terram nonwoven geotextile lineup is suitable for a diverse array of applications, including soil separation and stabilization, erosion control and slope protection, drainage and filtration systems, road and railway construction, landfill lining and capping, and pond/reservoir liners, among many other geotechnical and civil engineering projects. Trusted by engineers and contractors worldwide, Terram nonwoven geotextiles deliver reliable, long-term performance you can count on. Contact the Terram team today to discuss your project requirements and discover the ideal solution for your needs.

Further information can be found at https://terram.com/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	-	-
Fossil materials	100	UK, ME
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0048

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 square metre
Mass per declared unit	0.107 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The geotextile is made from polypropylene fibres. The components are manufactured in the UK and delivered to the distributors or projects directly. Main materials present in the components are polypropylene fibre. Wastewater treatment is also considered. A wooden pallet and packaging film are used as packaging material for transporting the geotextile to the dedicated marketplace. A1 Raw Materials: This is the starting point, where the primary raw material (PP Fibre) is obtained. A2 Transport to Factory: This stage involves the transportation of the raw materials to the production facility. A3 Production: a. Carding: A process that aligns and organizes the fibres to prepare them for further processing. b. Needling: A process that entangles the fibres together to create a cohesive textile or composite material. c. Heat bonding: A process that uses heat to fuse the fibres together, improving the material's strength and durability. d. Quality control: Ensuring the final product meets the required standards and specifications.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance is defined according to the PCR. Average distance of transportation from production plant to retailers site is assumed as 196 km and the transportation method is assumed to be lorry. Vehicle capacity utilisation volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. (Empty returns are considered in the ecoinvent database.) Transportation does not cause losses as product is packaged properly. Environmental impacts from installation into the building include placing concrete foundation, generation of waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets. The impacts of material production, its processing and its disposal as installation waste are also included (Based on Eurostat scenario). A4 Transport to Site: The finished product is transported from the factory to the installation site. A5 Installation: The product is installed or assembled at the final location.

PRODUCT USE AND MAINTENANCE (B1-B7)

The use phase is not included as no emissions are expected to occur during the use of the grid.
Air, soil, and water impacts during the use phase have not been studied.

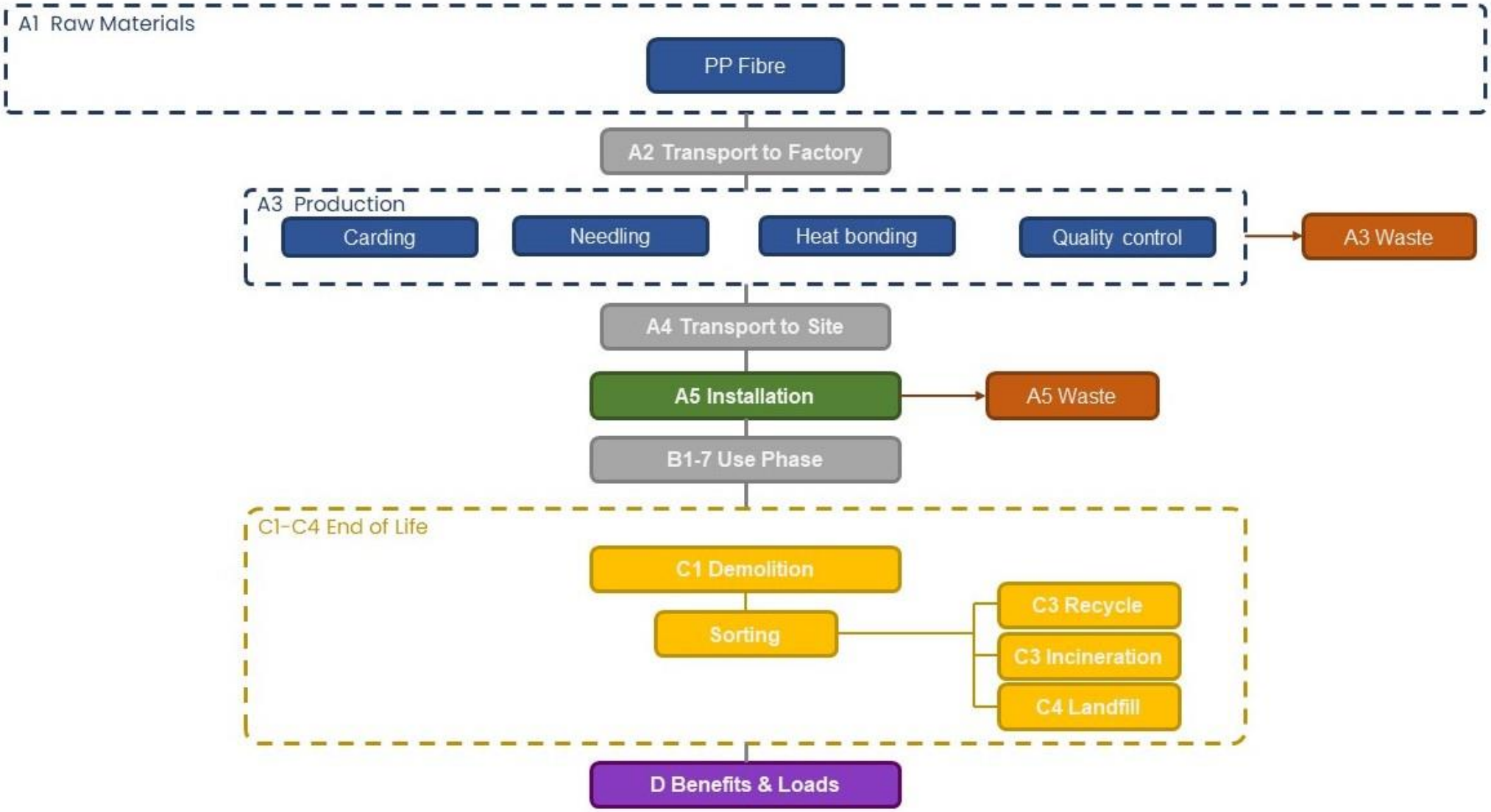
B1-7 Use Phase: This is the period during which the product is in use, serving its intended purpose.

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy in de-construction process is considered. It is assumed that the waste is collected separately and transported to the waste treatment plant. Transportation distance to treatment is assumed to be 50 km and the transportation method is assumed to be lorry (C2). Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery with efficiency greater than 60%. Additionally, waste that is incinerated without energy recovery or landfilled is included in Module C4. Due to the material and energy recovery potential of parts in the end-of-life product and packaging, recycled raw materials lead to avoided virgin material production, while the energy recovered from incineration replaces electricity and heat production (D). The benefits and loads of incineration and recycling are included in Module D.

C1 Demolition: When the product reaches the end of its life cycle, it is demolished or disassembled. Sorting: The demolished materials are sorted and separated based on their composition. C3 Recycle: The sorted materials are recycled and reused in new products. C3 Incineration: Some materials may be incinerated to recover energy or reduce waste volume. C4 Landfill: Materials that cannot be recycled or incinerated are disposed of in a landfill. D Benefits & Loads: This stage considers the environmental and economic impacts associated with the product's lifecycle, including the benefits and loads.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	2.55E-01	2.24E-03	2.03E-02	2.77E-01	2.06E-03	1.92E-02	MND	MND	MND	MND	MND	MND	MND	4.02E-04	8.98E-04	1.29E-01	6.32E-03	-6.33E-02
GWP – fossil	kg CO_2e	2.55E-01	2.24E-03	3.78E-02	2.95E-01	2.06E-03	1.58E-03	MND	MND	MND	MND	MND	MND	MND	4.01E-04	8.98E-04	1.29E-01	6.32E-03	-6.32E-02
GWP – biogenic	kg CO_2e	0.00E+00	0.00E+00	-1.76E-02	-1.76E-02	7.95E-07	1.76E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.61E-05
GWP – LULUC	kg CO_2e	1.42E-04	8.77E-07	5.88E-05	2.02E-04	7.58E-07	2.12E-07	MND	MND	MND	MND	MND	MND	MND	9.39E-07	3.52E-07	1.09E-06	6.48E-07	-1.48E-04
Ozone depletion pot.	kg CFC_{-11}e	5.52E-09	5.11E-10	3.01E-09	9.05E-09	4.73E-10	3.63E-11	MND	MND	MND	MND	MND	MND	MND	2.03E-11	2.08E-10	2.82E-10	1.74E-10	-3.41E-09
Acidification potential	mol H^+e	9.34E-04	1.32E-05	1.15E-04	1.06E-03	8.70E-06	2.18E-06	MND	MND	MND	MND	MND	MND	MND	2.29E-06	3.64E-06	2.97E-05	5.19E-06	-5.24E-04
EP-freshwater[2)]	kg Pe	6.04E-06	1.77E-08	8.30E-07	6.88E-06	1.68E-08	7.00E-09	MND	MND	MND	MND	MND	MND	MND	4.26E-08	6.30E-09	3.37E-08	1.06E-08	-2.52E-06
EP-marine	kg Ne	1.55E-04	3.69E-06	2.85E-05	1.87E-04	2.59E-06	1.38E-06	MND	MND	MND	MND	MND	MND	MND	3.04E-07	1.09E-06	1.39E-05	8.22E-06	-6.03E-05
EP-terrestrial	mol Ne	1.71E-03	4.08E-05	3.00E-04	2.05E-03	2.85E-05	9.14E-06	MND	MND	MND	MND	MND	MND	MND	3.45E-06	1.20E-05	1.42E-04	1.88E-05	-7.07E-04
POCP ("smog")[3)]	kg NMVOCe	7.49E-04	1.24E-05	8.75E-05	8.49E-04	9.13E-06	2.66E-06	MND	MND	MND	MND	MND	MND	MND	9.46E-07	3.67E-06	3.46E-05	6.71E-06	-1.96E-04
ADP-minerals & metals[4)]	kg Sbe	1.53E-06	5.13E-09	1.12E-07	1.65E-06	4.82E-09	1.53E-09	MND	MND	MND	MND	MND	MND	MND	3.69E-09	3.18E-09	1.16E-08	2.06E-09	-5.60E-08
ADP-fossil resources	MJ	8.36E+00	3.34E-02	8.73E-01	9.27E+00	3.09E-02	3.46E-03	MND	MND	MND	MND	MND	MND	MND	8.50E-03	1.33E-02	2.39E-02	1.36E-02	-8.57E-01
Water use[5)]	m^3e depr.	1.85E-01	1.47E-04	1.01E-02	1.95E-01	1.38E-04	1.55E-04	MND	MND	MND	MND	MND	MND	MND	2.26E-04	6.16E-05	5.09E-03	8.59E-05	-1.39E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	8.87E-09	2.47E-10	8.73E-10	9.99E-09	2.37E-10	2.88E-11	MND	MND	MND	MND	MND	MND	MND	7.49E-12	7.75E-11	1.45E-10	9.79E-11	-5.16E-09
Ionizing radiation[6)]	kBq U235e	2.74E-02	1.59E-04	2.15E-02	4.90E-02	1.47E-04	3.16E-05	MND	MND	MND	MND	MND	MND	MND	2.28E-04	6.98E-05	7.34E-05	6.73E-05	-2.04E-02
Ecotoxicity (freshwater)	CTUe	1.52E+00	2.95E-02	4.71E-01	2.02E+00	2.78E-02	7.18E-03	MND	MND	MND	MND	MND	MND	MND	5.78E-03	1.11E-02	2.70E-01	2.91E-02	-1.60E+00
Human toxicity, cancer	CTUh	8.89E-11	7.80E-13	2.60E-11	1.16E-10	6.82E-13	1.23E-12	MND	MND	MND	MND	MND	MND	MND	1.89E-13	3.42E-13	1.14E-11	4.63E-13	-2.04E-11
Human tox. non-cancer	CTUh	1.74E-09	2.88E-11	2.98E-10	2.07E-09	2.75E-11	9.66E-12	MND	MND	MND	MND	MND	MND	MND	6.22E-12	1.12E-11	4.37E-10	1.23E-11	-6.34E-10
SQP[7)]	-	8.60E-01	3.67E-02	1.47E+00	2.37E+00	3.56E-02	4.36E-03	MND	MND	MND	MND	MND	MND	MND	1.54E-03	9.33E-03	8.02E-03	3.21E-02	-5.78E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	3.20E-01	3.68E-04	2.15E-01	5.36E-01	3.48E-04	2.01E-04	MND	MND	MND	MND	MND	MND	MND	1.69E-03	1.91E-04	9.34E-04	2.83E-04	-2.20E-01
Renew. PER as material	MJ	0.00E+00	0.00E+00	1.54E-01	1.54E-01	0.00E+00	-1.54E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-04
Total use of renew. PER	MJ	3.20E-01	3.68E-04	3.69E-01	6.90E-01	3.48E-04	-1.54E-01	MND	MND	MND	MND	MND	MND	MND	1.69E-03	1.91E-04	9.34E-04	2.83E-04	-2.19E-01
Non-re. PER as energy	MJ	4.85E+00	3.34E-02	8.22E-01	5.71E+00	3.09E-02	3.46E-03	MND	MND	MND	MND	MND	MND	MND	8.48E-03	1.33E-02	2.39E-02	1.36E-02	-8.41E-01
Non-re. PER as material	MJ	3.51E+00	0.00E+00	5.10E-02	3.56E+00	0.00E+00	-5.10E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-1.75E+00	-1.75E+00	1.40E-02
Total use of non-re. PER	MJ	8.36E+00	3.34E-02	8.73E-01	9.27E+00	3.09E-02	-4.75E-02	MND	MND	MND	MND	MND	MND	MND	8.48E-03	1.33E-02	-1.73E+00	-1.74E+00	-8.27E-01
Secondary materials	kg	1.40E-03	9.57E-06	2.69E-03	4.10E-03	8.57E-06	4.09E-06	MND	MND	MND	MND	MND	MND	MND	8.66E-07	4.47E-06	2.13E-05	4.77E-06	2.81E-04
Renew. secondary fuels	MJ	3.72E-03	9.08E-08	4.43E-03	8.16E-03	8.65E-08	3.26E-08	MND	MND	MND	MND	MND	MND	MND	7.07E-09	4.92E-08	7.50E-07	1.83E-07	-1.96E-06
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	4.67E-03	4.21E-06	2.39E-04	4.91E-03	4.00E-06	3.81E-06	MND	MND	MND	MND	MND	MND	MND	7.17E-06	1.68E-06	1.90E-04	1.44E-05	-6.79E-04

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	7.91E-03	4.43E-05	1.66E-03	9.61E-03	4.09E-05	1.89E-05	MND	MND	MND	MND	MND	MND	MND	3.05E-05	1.50E-05	0.00E+00	0.00E+00	-5.11E-03
Non-hazardous waste	kg	2.63E-01	7.09E-04	2.75E-02	2.91E-01	6.72E-04	7.89E-03	MND	MND	MND	MND	MND	MND	MND	1.94E-03	2.65E-04	5.40E-02	5.40E-02	-2.15E-01
Radioactive waste	kg	7.86E-06	2.24E-07	5.51E-06	1.36E-05	2.07E-07	1.28E-08	MND	MND	MND	MND	MND	MND	MND	6.15E-08	9.18E-08	0.00E+00	0.00E+00	-5.59E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.23E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.72E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.68E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.01E+00	0.00E+00	0.00E+00

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

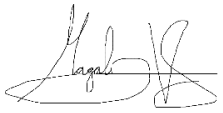
I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
09.08.2024



VERIFIED ISO 14025

Scaling table

A1-A3				
	+A1	+A2		
Product name	GWP	GWPt	GWPf	GWPb
T Advantage	0.2372	0.2282	0.2479	-0.0198
T700	0.2372	0.2282	0.2479	-0.0198
T1000	0.2820	0.2713	0.2947	-0.0236
T1000 Orange	0.2899	0.2789	0.3030	-0.0242
T1000 LE	0.3690	0.3550	0.3856	-0.0309
T1300	0.4085	0.3930	0.4269	-0.0342
T1500	0.4612	0.4437	0.4820	-0.0386
T2000	0.5535	0.5325	0.5784	-0.0463
T3000	0.6589	0.6339	0.6886	-0.0551
RG3	0.7379	0.7099	0.7712	-0.0727
PW1	0.8697	0.8367	0.9089	-0.0727
T4000	0.8697	0.8367	0.9089	-0.0881
RG4	0.9488	0.9128	0.9915	-0.0793
T4500	1.0542	1.0142	1.1017	-0.0617
RG5	1.0542	1.0142	1.1017	-0.0881
RG6	1.3178	1.2678	1.3771	-0.1102
RG7	1.5813	1.5213	1.6525	-0.1322
PW9	2.1084	2.0284	2.2034	-0.1763
RG9	2.1084	2.0284	2.2034	-0.1763
RG11	2.6355	2.5355	2.7542	-0.2204

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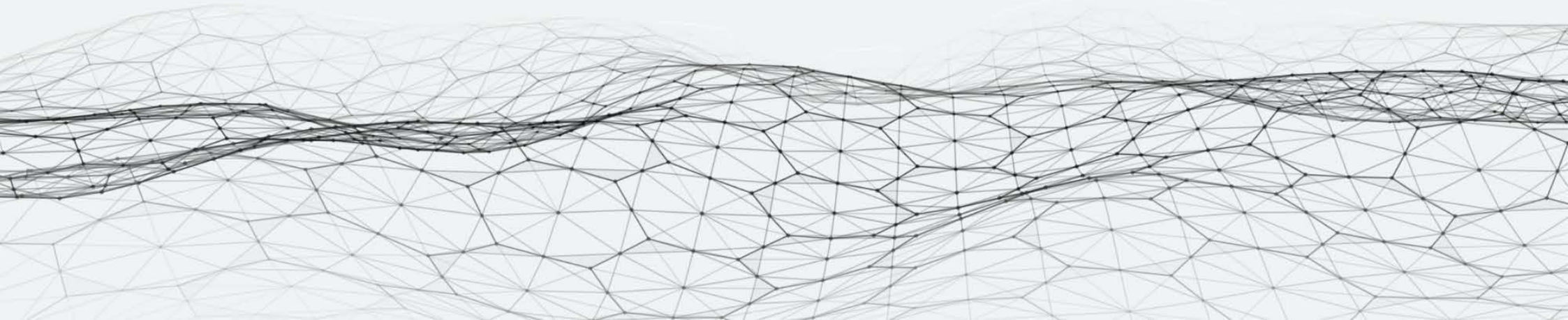
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