



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

GeoStrap product family
Geoquest India



EPD HUB, HUB-7533

Published on 16.09.2026, last updated on 16.09.2026, valid until 15.09.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Geoquest India
Address	Arjikuja Plot No. 255, 250, 251 & 252 GIDC Industrial Estate, Hansalpur, Viramgam, District: Ahmedabad, INDIA
Contact details	info@geoquest-group.co.in
Website	https://www.geoquest-group.co.in

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Anais Grandclerc
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Afzal khan Peerukhan as an authorized verifier for EPD Hub

This EPD is intended for business-to-business communication. 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	GeoStrap product family
Additional labels	GeoStrap 5, GeoStrap 7, GeoStrap 9, GeoStrap(R)5, GeoStrap(R)7
Product reference	-
Place(s) of raw material origin	Asia
Place of production	India, Ahmedabad
Place(s) of installation and use	Worldwide
Period for data	January 2025 - December 2025
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	3.9%, 6.5%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	14,7

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
Mass of packaging	0,0393 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	4,8
GWP-total, A1-A3 (kgCO ₂ e)	4,75
Secondary material, inputs (%)	1,62
Total energy use, A1-A3 (kWh)	18,4
Net freshwater use, A1-A3 (m ³)	0,04

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Geoquest began its activity in the Indian Peninsula in 1997, initially through a licensee. In 2006, the business was transferred to Geoquest India, a subsidiary of the Soletanche Freyssinet Group with its headquarters located in Paris.

Geoquest India is headquartered in New Delhi and has 3 regional offices – Mumbai (West), Kolkata (East) and Bengaluru (South), in addition to a manufacturing and testing facility at Arjikuja, near Ahmedabad. Geoquest has an active presence in neighbouring countries like Nepal, Bhutan, Bangladesh, Myanmar, Sri Lanka, and Maldives.

Our inherent competencies can produce high calibre interface designs by pooling together the best industry inter-disciplinary expertise and experience. We have the capacity to create and render major and complex engineering projects with high technical content, logistical challenges, and construction speciality. In the process, we often source expert peer reviews through our global network. Our products ensure superior and assured quality and safety standards, long term performance and durability, sustainability, as well as low risk and economic ramifications.

Geoquest India has forged an unrivalled level of expertise and experience in Retaining Structures, Crossing Structures, Preventing and Protecting infrastructure, Soil Reinforcement and Ground Stabilization.

Our technical solutions are defined by four functions corresponding to the purpose of the structure to be designed: RETAIN, CROSS, PROTECT, & STRENGTHEN.

Over the last couple of decades, Geoquest India has been consistently setting the gold standards in Geoquest India structures and has played an active role in 500+ projects in the region.

PRODUCT DESCRIPTION

GeoStrap reinforcing strips consist of discrete channels of closely packed high tenacity polyester yarns encased in a polyethylene sheath. The polyester (PET) yarns are selected to comply with the most demanding up to date standards and demonstrate excellent durability in standard environments (pH 2 to 9). GeoStrap reinforcements are not sensitive to backfills with high concentrations of salts and are suitable to marine applications. The polyethylene continuous sheath ensures a very efficient protection against potential installation damage in aggressively rough backfills. This makes the GeoStrap reinforcing strip a particularly strong geosynthetic reinforcement.

Further information can be found at:
<https://www.geoquest-group.co.in>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	0	-
Minerals	0	-
Fossil materials	100	Asia
Bio-based materials	0	-

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	0,037

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 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	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x	Recovery	Recycling
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse		

Not declared = ND

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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

MANUFACTURING PROCESS:

The manufacturing process is a co-extrusion process of LLDPE to coat channels of PET yarns to obtain strips. The LLDPE granulates are melted with masterbatch carbon black concentrate in a extruder; the PET yarns are led though a die while packed in separate bundles and homogeneously tensioned while pulled trough the extruder. The yarns are then coated with melted black LLDPE while it passes through the extrusion die. Immediately after the coating, the strip passes between embossing rollers to ensure its geometry, give a textured finish, and apply markings on the sheath. The strip is then cooled down by immersing in water. The wet strip is then dried and wrapped in coils (the length is controlled at the end of the process by specific equipment).

PACKAGING OF THE FINISHED PRODUCT:

Finished strips are coiled with no core and then wrapped with distinctive colour tape per grade. Strips are generally packaged in 100 m (minimum) long coils. Coils are stacked in pallets with optimized dimensions for transport. The coils are then finally wrapped in a transparent polyethylene film and stacked in pallets for storage.

ENERGY USED:

The water used for the manufacturing of the strips is provided in a closed circuit. The energy used for the production lines is from the local energy mix (India).

WASTE PROCESSING:

The treatment of PET and LLDPE waste generated during the production of GeoStrap is based on the waste treatment mix in India.

TRANSPORTATION OF RAW MATERIALS:

The transportation distances considered for PET yarns (from the suppliers to the manufacturing plant) are averaged between two sources: 82% of the total purchased PET yarns comes from India and 18% comes from China. The distance considered for A2 is then equal to 2047 km by lorry. The transportation distances considered for LLDPE sheath (from the suppliers to the manufacturing plant) are also averaged between two sources: 73% of the total purchased LLDPE comes from Pacific Asia and 27% comes from India. The distance considered for A2 is then equal to 3833 km by boat and 770 km by lorry.

The transportation distances considered for the packaging materials are equal to 50 km (hypothesis).

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.

TRANSPORTATION (A4):

Transportation does not cause losses as products are packaged properly. Freight mode and distances for transportation from the production site to the construction site has been approached by an averaged transport scenario based on a barycentric method applied to sales from 2025. The average distance obtained is equal to 1316 km with construction sites only in India in 2025.

The vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality it may vary but as the role of transportation emission in total results is small and so the variety in load assumed to be negligible. Empty returns are not taken into account as it is assumed that return trips are used by transportation companies to serve the needs of other clients.

INSTALLATION PROCESS (A5):

Regarding the installation process, a productivity ratio has been used to allocate the excavation/compaction work (diesel machine operation in hours and translated in liters) needed to install the whole system (panels, reinforcements and backfill). It is based on an average reinforcement density and onsite building productivity ratio for a typical reinforced soil structure. Note that this system involves concrete panels (most common application).

INSTALLATION WASTES (A5):

A 5% waste generation GeoStrap has been considered during the installation phase (LLDPE and PET wastes). The installation wastes (LLDPE and PET) and the packaging wastes (PE, PET, and PP) are considered incinerated after the installation phase. A distance of 50 km are considered from the construction site to the waste treatment location and the transportation method is assumed as lorry which is the most common.

PRODUCT END OF LIFE (C1-C4, D)

Energy consumption during demolition (C1):

A demolition ratio has been used to allocate the required operation of diesel machines (expressed in hours and translated in liters of diesel) for dismantling the reinforced soil structure system (panels, reinforcements and backfill). As for the installation phase, this ratio has been calculated taking into account an average reinforcements density and onsite demolition productivity ratio for a typical reinforced soil structure.

Assumptions for C3-C4 waste:

After circa 100 years of service life, retrieved PET and LLDPE are considered 100 % treated through waste disposal in a municipal solid waste incinerator (MSWI) (based on current practice and experience).

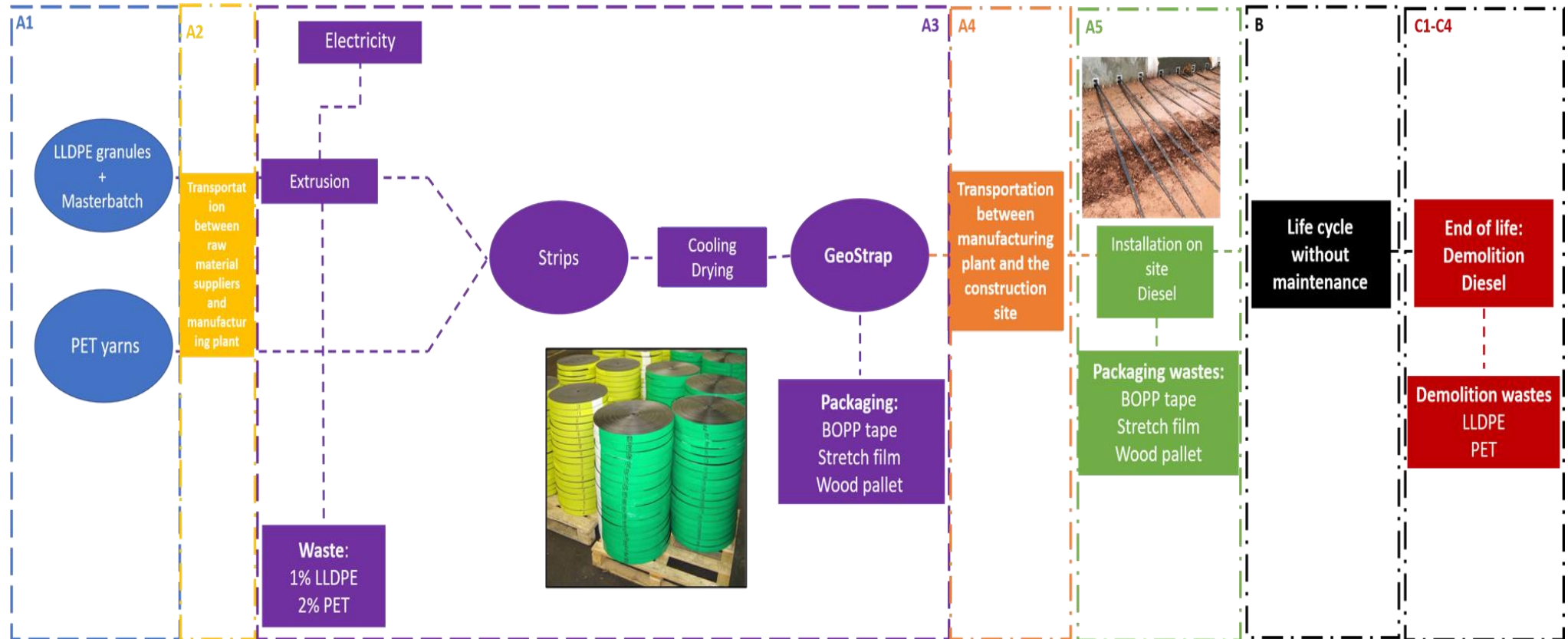
Distance and transport method to waste processing (C2):

Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common.

Assumptions for benefits and loads beyond the system boundary:

In this section, we considered all the energy loads and benefits for the packaging materials as well as product materials.

LIFE CYCLE FLOW DIAGRAM



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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

The packaging of raw materials has been excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

A technical inconsistency between the primary energy results (total use of non-renewable primary energy) and the ADP-fossil values (Abiotic Depletion Potential for fossil resources) in modules A5 and C3 has been identified. An analysis has shown that these differences originate from the automatic

energy balancing system. These inconsistencies are inherent to the third-party verified EPDs and background databases used and cannot be adjusted by the practitioner.

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 material	No allocation
Ancillary materials	Not applicable
Manufacturing energy and waste	Physical Properties

More details below:

- Water has not been added to the system because it is produced in a closed circuit.
- Electricity consumption for 1 kg of produced product is obtained by dividing the reported annual electricity consumption by the annual weight of product produced.
- Same principle as for electricity consumption is applied for percentage of waste for raw materials.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	3.9%, 6.5%

GeoStrap is sold in various grades: GeoStrap5-25kN, 30kN, 37.5kN, 50kN, 65kN, 75kN, GeoStrap7-30kN, 50kN, 75kN, 100kN, GeoStrap9-100kN, GeoStrap(R)5-25kN, 30kN, 37.5kN, 40kN, 50kN, 65kN, 70kN, 80kN, 90kN, 100kN, and GeoStrap(R)7-30kN, 40kN, 50kN, 60kN, 70kN, 75kN, 80kN, 90kN, 100kN, 110kN, 120kN, 130kN, 135kN, 140kN, 150kN, 175kN, where GeoStrap(R) is an optimized version of GeoStrap (lower LLDPE quantity for GeoStrap(R)).

We therefore selected the best-selling grade, GeoStrap5-50 kN, as the representative product for the EPD. To demonstrate that this grade is representative of the entire product family, the total GWP was calculated for all GeoStrap grades from A to C.

According to the representativeness requirements, the difference between the total GWP of the selected representative product (GeoStrap5-50 kN) and that of any other product within the family must not exceed 10%. The results show that the variation in total GWP across all grades from A to C, compared with GeoStrap5-50 kN, remains well below this threshold. The

maximum deviation is 0.8% between the lowest value, GeoStrap5-25 kN, and the representative product, and 1.4% between the highest value, GeoStrap(R)7-150 kN, and the representative product (GeoStrap5-50 kN).

Regarding GWP fossil emissions for modules A1–A3, the differences observed between each grade and the selected representative product remain well below the required 50% threshold. The maximum deviation is 3.9% between the lowest-emitting grade, GeoStrap5-25 kN, and the representative product, GeoStrap5-50 kN, while the highest deviation is 6.5% between the highest-emitting grade, GeoStrap(R)7-150 kN, and the representative product.

These results confirm that GeoStrap5-50 kN is a representative average of the product family and is therefore suitable for use as the reference product in the EPD.

All the GWP total results for all the products are presented in Annex 1.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

ENVIRONMENTAL IMPACT DATA

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

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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 ₂ e	4,06E+00	3,68E-01	3,22E-01	4,75E+00	1,37E-01	1,57E+00	ND	ND	ND	ND	ND	ND	ND	5,41E-01	4,93E-03	2,41E+00	0,00E+00	-3,50E+00
GWP – fossil	kg CO ₂ e	4,05E+00	3,68E-01	3,81E-01	4,80E+00	1,37E-01	1,51E+00	ND	ND	ND	ND	ND	ND	ND	5,41E-01	4,92E-03	2,41E+00	0,00E+00	-3,48E+00
GWP – biogenic	kg CO ₂ e	0,00E+00	0,00E+00	-5,93E-02	-5,93E-02	7,36E-05	5,98E-02	ND	ND	ND	ND	ND	ND	ND	5,52E-05	1,19E-06	-1,57E-05	0,00E+00	-1,04E-02
GWP – LULUC	kg CO ₂ e	3,45E-03	1,76E-04	1,24E-04	3,75E-03	4,99E-05	5,60E-03	ND	ND	ND	ND	ND	ND	ND	5,54E-05	2,29E-06	7,34E-06	0,00E+00	-3,45E-03
Ozone depletion pot.	kg CFC-11e	7,76E-06	5,54E-09	1,00E-08	7,77E-06	3,23E-09	4,14E-07	ND	ND	ND	ND	ND	ND	ND	8,28E-09	7,86E-11	3,79E-10	0,00E+00	-7,04E-09
Acidification potential	mol H ⁺ e	1,66E-02	6,89E-03	2,49E-03	2,60E-02	3,23E-04	1,17E-02	ND	ND	ND	ND	ND	ND	ND	4,88E-03	1,28E-05	3,70E-04	0,00E+00	-2,43E-02
EP-freshwater ²⁾	kg Pe	9,73E-04	1,94E-05	2,11E-04	1,20E-03	1,01E-05	9,94E-05	ND	ND	ND	ND	ND	ND	ND	1,56E-05	4,73E-07	3,41E-06	0,00E+00	-1,88E-03
EP-marine	kg Ne	3,09E-03	1,74E-03	3,92E-04	5,23E-03	8,97E-05	5,30E-03	ND	ND	ND	ND	ND	ND	ND	2,26E-03	3,29E-06	2,13E-04	0,00E+00	-3,66E-03
EP-terrestrial	mol Ne	3,17E-02	1,93E-02	3,93E-03	5,49E-02	9,67E-04	5,67E-02	ND	ND	ND	ND	ND	ND	ND	2,48E-02	3,55E-05	1,93E-03	0,00E+00	-3,71E-02
POCP (“smog”) ³⁾	kg NMVOCe	1,62E-02	5,50E-03	1,15E-03	2,29E-02	5,71E-04	1,73E-02	ND	ND	ND	ND	ND	ND	ND	7,39E-03	1,93E-05	4,78E-04	0,00E+00	-1,06E-02
ADP-minerals & metals ⁴⁾	kg Sbe	2,93E-05	6,26E-07	2,49E-07	3,02E-05	4,12E-07	1,91E-06	ND	ND	ND	ND	ND	ND	ND	1,94E-07	1,44E-08	6,56E-08	0,00E+00	-1,18E-06
ADP-fossil resources	MJ	8,57E+01	4,91E+00	4,49E+00	9,51E+01	2,07E+00	1,95E+01	ND	ND	ND	ND	ND	ND	ND	7,07E+00	7,34E-02	2,73E-01	0,00E+00	-3,27E+01
Water use ⁵⁾	m ³ e depr.	1,42E+00	1,84E-02	4,48E-02	1,48E+00	1,19E-02	9,88E-02	ND	ND	ND	ND	ND	ND	ND	1,77E-02	3,95E-04	5,05E-02	0,00E+00	-3,97E-01

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, EF 3.1

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	1,86E-07	2,09E-08	2,42E-08	2,31E-07	1,36E-08	4,91E-08	ND	ND	ND	ND	ND	ND	ND	1,39E-07	4,78E-10	1,89E-09	0,00E+00	-3,62E-07
Ionizing radiation ⁶⁾	kBq	1,99E-01	3,00E-03	2,10E-02	2,23E-01	2,23E-03	4,79E-02	ND	ND	ND	ND	ND	ND	ND	3,13E-03	6,26E-05	2,73E-04	0,00E+00	-5,94E-02
	11235e																		
Ecotoxicity (freshwater)	CTUe	1,93E+01	5,41E-01	1,14E+00	2,09E+01	2,79E-01	3,74E+00	ND	ND	ND	ND	ND	ND	ND	3,89E-01	1,27E-02	7,82E-01	0,00E+00	-7,71E+00
Human toxicity, cancer	CTUh	9,29E-10	6,97E-11	2,75E-10	1,27E-09	2,19E-11	1,73E-10	ND	ND	ND	ND	ND	ND	ND	5,56E-11	8,01E-13	7,62E-11	0,00E+00	-7,05E-10
Human tox. non-cancer	CTUh	3,54E-08	2,05E-09	1,07E-08	4,81E-08	1,28E-09	5,10E-09	ND	ND	ND	ND	ND	ND	ND	8,80E-10	4,63E-11	4,91E-09	0,00E+00	-2,84E-08
SQP ⁷⁾	-	1,07E+01	2,44E+00	8,82E+00	2,20E+01	2,09E+00	-3,42E+00	ND	ND	ND	ND	ND	ND	ND	4,96E-01	7,36E-02	6,46E-02	0,00E+00	-1,82E+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	3,24E+00	4,91E-02	9,57E-01	4,25E+00	3,22E-02	1,01E+00	ND	ND	ND	ND	ND	ND	ND	4,48E-02	1,01E-03	6,00E-03	0,00E+00	-4,35E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	5,34E-01	5,34E-01	0,00E+00	-5,34E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,47E-02
Total use of renew. PER	MJ	3,24E+00	4,91E-02	1,49E+00	4,78E+00	3,22E-02	4,76E-01	ND	ND	ND	ND	ND	ND	ND	4,48E-02	1,01E-03	6,00E-03	0,00E+00	-4,29E+00
Non-re. PER as energy	MJ	5,34E+01	4,91E+00	3,86E+00	6,21E+01	2,07E+00	1,61E+01	ND	ND	ND	ND	ND	ND	ND	7,07E+00	7,34E-02	-2,87E+01	0,00E+00	-3,27E+01
Non-re. PER as material	MJ	3,23E+01	0,00E+00	1,74E-01	3,25E+01	0,00E+00	-1,74E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-3,23E+01	0,00E+00	-3,60E-02
Total use of non-re. PER	MJ	8,57E+01	4,91E+00	4,03E+00	9,47E+01	2,07E+00	1,59E+01	ND	ND	ND	ND	ND	ND	ND	7,07E+00	7,34E-02	-6,10E+01	0,00E+00	-3,27E+01
Secondary materials	kg	1,62E-02	2,11E-03	2,33E-03	2,06E-02	8,78E-04	1,63E-02	ND	ND	ND	ND	ND	ND	ND	2,94E-03	3,10E-05	4,08E-04	0,00E+00	-2,43E-03
Renew. secondary fuels	MJ	1,82E-04	1,46E-05	1,41E-02	1,43E-02	1,16E-05	7,20E-04	ND	ND	ND	ND	ND	ND	ND	7,68E-06	3,99E-07	1,70E-06	0,00E+00	-1,63E-03
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	3,36E-02	5,02E-04	1,49E-03	3,56E-02	2,74E-04	8,20E-03	ND	ND	ND	ND	ND	ND	ND	4,68E-04	1,09E-05	4,36E-04	0,00E+00	-1,08E-02

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	2,47E-01	9,76E-03	2,48E-03	2,59E-01	1,17E-02	1,47E-02	ND	ND	ND	ND	ND	ND	ND	7,87E-03	2,99E-04	1,92E-02	0,00E+00	-2,35E-01
Non-hazardous waste	kg	2,02E+01	1,69E-01	2,79E-01	2,06E+01	2,43E-01	1,12E+00	ND	ND	ND	ND	ND	ND	ND	1,07E-01	5,83E-03	9,82E-01	0,00E+00	-8,99E+00
Radioactive waste	kg	4,87E-05	7,30E-07	8,96E-07	5,03E-05	5,37E-07	6,67E-06	ND	ND	ND	ND	ND	ND	ND	7,69E-07	1,51E-08	6,83E-08	0,00E+00	-1,76E-05

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	ND	ND	ND	ND	ND	ND	ND	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	0,00E+00	ND	ND	ND	ND	ND	ND	ND	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	3,60E-02	ND	ND	ND	ND	ND	ND	ND	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	1,27E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,22E+01	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,85E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,35E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,09E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,89E+01	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	4,06E+00	3,68E-01	3,81E-01	4,81E+00	1,37E-01	1,51E+00	ND	ND	ND	ND	ND	ND	ND	5,41E-01	4,93E-03	2,41E+00	0,00E+00	-3,49E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Electricity, production mix , India, BAFU, 0.91 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry, >32 metric ton, diesel, EURO 6, 1316 km

Transport to the building site (A4) - Scenario documentation

Scenario parameter	Value
Capacity utilization (including empty return) %	100
Bulk density of transported products	6460
Volume capacity utilization factor	1

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	Based on feedback from construction site, 4 hours are necessary to excavate and compact 25 m ² of MSE wall. This 4 hours are considered dedicated for the reinforcements with an average mass of 1.5kg of GeoStrap installed per sqm of MSE Wall. The fuel consumption of the construction equipments is considered equal to 1.63 L/h with a machine rated at 30 kWh. 0.1067 h is necessary to install 1 kg of GeoStrap and then 3.2 kWh per kg of GeoStrap.
Water use (m ³)	Water has not been added to the system because it is produced in a closed circuit.
Ancillary materials: type and mass (kg)	-
Waste materials: type and mass (kg)	- PET waste generated during the installation of the product on site estimated 5% loss - 0.0255 kg per kg of GeoStrap - LLDPE waste generated during the installation of the product on site - 0.024 kg per kg of GeoStrap - PP waste for BOPP tape - packaging - 0.00145 kg per kg of GeoStrap - PP waste for other packaging - 0.00054 kg per kg of GeoStrap - PET waste for other packaging - 0.00054 kg per kg of GeoStrap - PE waste from stretch film packaging - 0.00145 kg per kg of GeoStrap - Wood pallet waste - 0.036 kg per kg of GeoStrap
Waste materials: output routes	All plastic wastes (packaging + installation wastes) are assumed to be fully (100%) incinerated in a

	waste-to-energy incineration plant with an energy efficiency exceeding 60%.The distance between the construction site and the waste treatment plant is considered equal to 50 km (hypothesis). The wood pallet is considered fully (100%) crushed for resale as fuel.
Direct emissions (kg)	11% of the plastic-based material waste is converted to electricity and 62% of the plastic-based material waste is converted to heat.

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	-
Collection process: Mixed waste (kg)	-
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0
Recovery: energy recovery (kg)	0
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	Incineration 50 km.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Afzal khan Peerukhan as an authorized verifier for EPD Hub Limited 16.09.2026



ANNEX 1: GWP TOTAL RESULTS PER KG AND PER LINEAR METER FOR THE DIFFERENTS GRADES AND WIDTH

	GRADE	LINEAR MASS (KG/LM)	GWP A1-A3 (KGCO2E/KG)	GWP A1-A3 (KGCO2E/LM)	GWP A1 C4 (KGCO2E/KG)	GWP A1-C4 (KGCO2E/LM)
GEOSTRAP5	25	0,091	4,57	0,42	9,34	0,85
	30	0,098	4,63	0,45	9,37	0,92
	37.5	0,109	4,73	0,52	9,41	1,03
	50	0,13796	4,75	0,66	9,41	1,30
	65	0,169	4,83	0,82	9,45	1,60
	75	0,186	4,85	0,90	9,46	1,76
GEOSTRAP7	30	0,086	4,73	0,41	9,41	0,81
	50	0,131	4,8	0,63	9,43	1,24
	75	0,198	4,85	0,96	9,48	1,88
	100	0,24401	4,86	1,19	9,46	2,31
GEOSTRAP9	100	0,301	4,68	1,41	9,38	2,82
GEOSTRAP(R)5	25	0,067	4,8	0,32	9,44	0,63
	30	0,075	4,85	0,36	9,45	0,71
	37.5	0,09	4,9	0,44	9,48	0,85
	40	0,092	4,9	0,45	9,48	0,87
	50	0,109	4,96	0,54	9,50	1,04
	65	0,139	5,03	0,70	9,53	1,33
	70	0,151	4,99	0,75	9,51	1,44
	80	0,1676	5,01	0,84	9,52	1,60
	90	0,1795	5,04	0,90	9,53	1,71
	100	0,2007	5,06	1,02	9,54	1,92

GEOSTRAP(R)7	30	0,086	4,73	0,41	9,41	0,81
	40	0,098	4,83	0,47	9,45	0,93
	50	0,114	4,91	0,56	9,47	1,08
	60	0,132	4,91	0,65	9,47	1,25
	70	0,152	4,99	0,76	9,51	1,45
	75	0,163	4,99	0,81	9,51	1,55
	80	0,17	4,98	0,85	9,51	1,62
	90	0,186	5,01	0,93	9,52	1,77
	100	0,209	5,01	1,05	9,51	1,99
	110	0,222	5,03	1,12	9,53	2,12
	120	0,245	5,04	1,23	9,53	2,34
	130	0,259	5,03	1,30	9,53	2,47
	135	0,264	5,04	1,33	9,53	2,52
	140	0,266	5,03	1,34	9,52	2,53
	150	0,306	5,06	1,55	9,54	2,92
	175	0,364	5,04	1,83	9,53	3,47