

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

TECHGRID Polymeric Coated Polyester Geogrid

from

TECHFAB India Industries Limited



Programme:

Programme operator:

EPD registration number:

Publication date:

Valid until:

The International EPD® System, www.environdec.com

EPD International AB

S-P-12018

2024-04-16

2029-04-15

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD [®] System, Indian Regional Hub
Address:	EPD International AB, Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com , www.envirodecindia.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products, version 1.3.2
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Life Cycle Assessment (LCA)
LCA accountability: TECHFAB India Industries Limited
LCA and EPD developer: Dr. Rajesh Kumar Singh Thinkstep Sustainability Solutions Pvt. Ltd., a Sphera Company
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Prabodha Acharya, Independent verifier, Mumbai, India Approved by: The International EPD [®] System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: TECHFAB India Industries Limited

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email- office@techfabindia.com, website : - www.techfabindia.com

Description of the organisation: TECHFAB India Industries Limited is a leading manufacturer of geosynthetics and geohazard mitigation products, offering solutions for construction and engineering applications. With state-of-the-art manufacturing facilities and a team of experienced professionals, we are committed to delivering high-quality products and services to our clients.

Product-related or management system-related certifications: All facilities at TECHFAB India Industries Limited are ISO 9001, ISO-45001, ISO 14001 certified.

Name and location of production site(s):

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Product information

Product name: TECHGRID Polymeric Coated Polyester Geogrid

Product identification: TECHGRID Polymeric Coated Polyester Geogrid is knitted polyester geogrid with a protective polymeric proprietary coating engineered for demanding soil reinforcement applications.

Product description: TECHGRID Polymeric Coated Polyester Geogrid is manufactured from select grades of high tenacity polyester yarn to ensure high strengths, low creep, and excellent durability. The yarns are formed into a dimensionally stable grid structure with uniform apertures, using an advanced weft insertion warp knitting process which is then given a durable polymeric coating to enhance dimensional stability, resistance to installation damage and durability.

Application: TECHGRID Polymeric Coated Polyester Geogrids application are listed below:

- Reinforced Soil wall
- Steep Slopes
- Basal Reinforcement for embankment
- Veneer reinforcement.
- Reinforcement of base and Sub base
- Area Stabilization
- Track bed stabilization
- Load transfer platform

Technical Data:

The values for the unit weight depend on the product type and its corresponding tensile strength. For this reason, only the value ranges for TECHGRID Uniaxial Geogrid (TGU)/ TECHGRID Biaxial Geogrid (TGB) are given here.

Characteristic	Value	Unit
Unit Weight (DIN EN ISO 9864)	150 - 1500	g/m ²
Tensile Strength (DIN EN ISO 10319) MD*	20 - 600	kN/m
Tensile Strength (DIN EN ISO 10319) CMD *	20 - 200	kN/m
Strain at Nominal Tensile Strength (DIN EN ISO 10319) MD	12 +2	%
Strain at Nominal Tensile Strength (DIN EN ISO 10319) CMD	12 +2	%
Mesh size (approx.)	35 x 35	mm
Standard roll dimension (width x length)	5.9 x 100	m
Durability (EN 13250)	Resistance to Hydrolysis- EN 12447 Predicted to be durable for a minimum 100 years in natural soil with 4 ≤pH≤ 9 and soil temperature ≤25°C on basis	

UN CPC code: 369

Geographical scope: The product is manufactured in India while the use and the end of life of the product is global.

LCA information

Functional unit / declared unit:

1 kg of the TECHGRID Polymeric Coated Polyester Geogrid.

Product	Unit weight [g/m ²]	Conversion factor from m ² to 1 kg
TECHGRID GEOGRID TGU-200	570	1.75

Reference service life: The estimated Service Life (ESL) is 120 years.

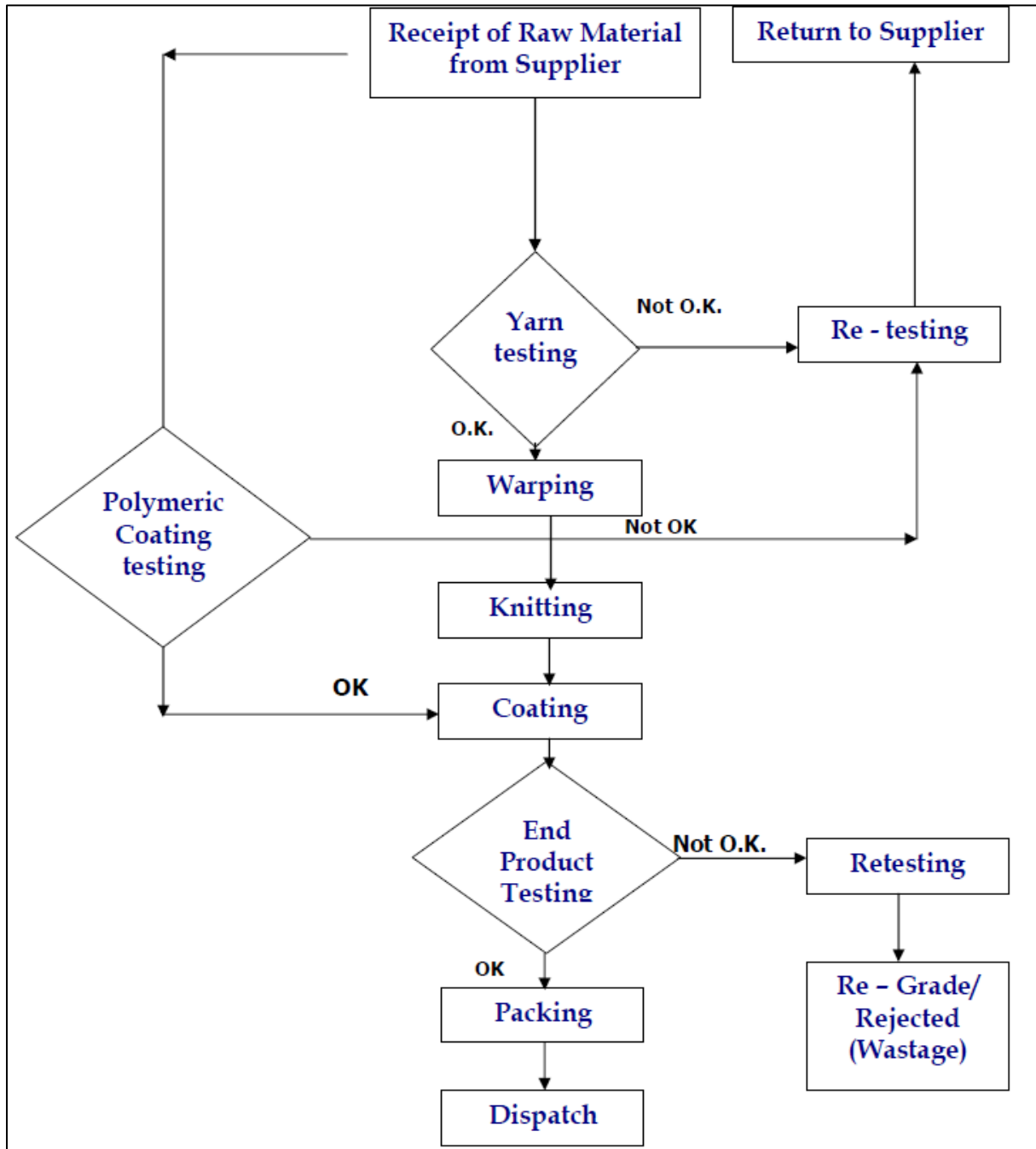
Time representativeness: April 2022 – March 2023

Database(s) and LCA software used: Sphera LCA FE (Formerly GaBi) software and Sphera's Managed Life Cycle Database 2023.2.

Description of system boundaries: Cradle to gate with options, module C1-C4, module D and optional module B

System diagram:

Below is a process flow diagram showing how TECHGRID Polymeric Coated Polyester Geogrid is made.



More information:

This EPD's system boundary has been defined as cradle to gate with options, module C1-C4, module D and optional module B.

A1: Raw Material Supply

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

A2: Transportation

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

A3: Manufacturing

Extrusion and coating processes are involved in manufacturing of TECHGRID Polymeric Coated Polyester Geogrid with materials like Polypropylene and polymeric coatings. Electricity as an energy resource is consumed during the manufacturing stage. The GHG-GWP impact for electricity used for manufacturing is 1.06 kg CO₂ eq./kWh. The end products are then packaged to be sold.

A4: Transportation to Installation Site

The Transportation of TechGrid to the construction site.

A5: Construction / Installation

The packaging waste treatment are included.

B1: Use

The Estimated Service Life (ESL) is 120 years. The ESL of TECHGRID Polymeric Coated Polyester Geogrid is 120 years as no product replacement is required. Once, installed the product does not require any cleaning and maintenance.

C2: Transportation to the Disposal Site

The Transportation of used TechGrid to the disposal site.

C4: Disposal

The used TechGrid (100%) is considered to be landfilled.

D: Benefits and Loads Beyond the system Boundary

No benefits from the end of life of product is accounted. However, in this stage, benefits from the recycling of packaging waste are calculated.

Cut-off criteria:

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

Data quality and sources:

Data quality is compliant with ISO 14025:2006. All primary data were collected for the year April 2022 to March 2023. All background data come from the Sphera Managed LCA Content 2023.2 databases.

Allocation:

The price allocation has been applied between the product output and the scraps (by-product).

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	IN	IN	IN	GLO	GLO	GLO	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	<90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Polyester Yarn	7.73E-01	0	0
Polymeric coating	3.79E-01	0	0
TOTAL	1.15E+00	0	0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Polyethylene Adhesive Tape	3.40E-04	0.03%	0
HDPE Core	2.20E-02	2.23%	0
Paper Label	8.00E-05	0.01%	4.00E-05
Paper Tube	3.00E-02	2.96%	1.50E-02
Polyethylene Film	1.00E-03	0.13%	0
Polypropylene Fabric	3.00E-03	0.32%	0
Wooden Pallet	1.00E-03	0.07%	3.90E-04
TOTAL	5.74E-02	5.74 %	0

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
None	-	-	-

Results of the environmental performance indicator

The environmental performance of the functional unit of one kg of TECHGRID Polymeric Coated Polyester Geogrid are reported below using the parameters and units as specified in PCR 2019:14 v1.3.2.

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.

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	6.02E+00	7.02E-02	6.66E-02	0.00E+00	1.18E-02	0.00E+00	7.12E-02	-3.91E-02
GWP-biogenic	kg CO ₂ eq.	-3.64E-02	3.70E-05	4.70E-02	0.00E+00	3.14E-05	0.00E+00	3.90E-04	-1.79E-04
GWP-luluc	kg CO ₂ eq.	3.10E-03	9.36E-07	1.28E-06	0.00E+00	2.31E-07	0.00E+00	1.04E-05	-2.56E-06
GWP-total	kg CO ₂ eq.	5.99E+00	7.02E-02	1.14E-01	0.00E+00	1.18E-02	0.00E+00	7.16E-02	-3.93E-02
ODP	kg CFC 11 eq.	1.18E-11	1.32E-15	1.76E-14	0.00E+00	5.00E-16	0.00E+00	1.16E-13	-3.09E13
AP	mol H ⁺ eq.	5.23E-02	1.26E-03	1.60E-05	0.00E+00	1.00E-04	0.00E+00	3.10E-04	-4.91E05
EP-freshwater	kg P eq.	7.51E-06	1.02E-08	4.79E-09	0.00E+00	2.47E-09	0.00E+00	1.32E-05	-6.37E08
EP-marine	kg N eq.	6.77E-03	5.32E-04	4.48E-06	0.00E+00	4.79E-05	0.00E+00	7.62E-05	-1.43E05
EP-terrestrial	mol N eq.	7.41E-02	5.83E-03	7.01E-05	0.00E+00	5.26E-04	0.00E+00	8.34E-04	-1.53E04
POCP	kg NMVOC eq.	2.20E-02	1.42E-03	1.26E-05	0.00E+00	9.19E-05	0.00E+00	2.22E-04	-3.99E05
ADP-minerals&metals*	kg Sb eq.	1.72E-07	3.62E-10	1.59E-10	0.00E+00	6.51E-11	0.00E+00	1.35E-09	-2.82E09
ADP-fossil*	MJ	1.12E+02	9.32E-01	4.14E-02	0.00E+00	1.63E-01	0.00E+00	1.03E+00	-7.23E01
WDP*	m ³	1.01E+00	8.11E-05	1.15E-02	0.00E+00	2.54E-05	0.00E+00	-1.69E03	-3.74E03
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals & metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

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

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG¹	kg CO ₂ eq.	6.01E+00	7.00E-02	6.66E-02	0.00E+00	1.18E-02	0.00E+00	7.07E-02	-3.92E-02

Resource use indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8.38E+00	1.29E-03	1.25E+00	0.00E+00	5.68E-04	0.00E+00	7.97E-02	-2.11E-01
PERM	MJ	1.24E+00	0.00E+00	-1.24E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	9.62E+00	1.29E-03	1.00E-02	0.00E+00	5.68E-04	0.00E+00	7.97E-02	-2.11E-01
PENRE	MJ	6.15E+01	9.32E-01	2.79E+00	0.00E+00	1.63E-01	0.00E+00	4.89E+01	-7.23E-01
PENRM	MJ	5.06E+01	0.00E+00	-2.74E+00	0.00E+00	0.00E+00	0.00E+00	-4.79E+01	0.00E+00
PENRT	MJ	1.12E+02	9.32E-01	4.14E-02	0.00E+00	1.63E-01	0.00E+00	1.03E+00	-7.23E-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
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	3.31E-02	2.66E-06	2.73E-04	0.00E+00	8.42E-07	0.00E+00	2.63E-07	-1.71E-04
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

¹This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6.83E-09	5.37E-14	5.05E-13	0.00E+00	-1.62E-14	0.00E+00	4.70E-11	-3.82E-11
Non-hazardous waste disposed	kg	1.39E-01	1.34E-05	6.92E-03	0.00E+00	2.66E-06	0.00E+00	9.97E-01	-3.58E-04
Radioactive waste disposed	kg	6.35E-04	1.15E-07	1.73E-06	0.00E+00	3.16E-08	0.00E+00	5.82E-06	-5.60E-05

Output flow indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	1.86E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	3.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

References

- EN 15804:2012+A2:2019 E “Sustainability of construction works – Environmental product declarations– Core rules for the product category of construction products.”
- General Programme Instructions of the International EPD[®] System. Version 4.0.
- LCA FE (GaBi) 10.6_2023: Dokumentation der LCA FE (GaBi)-Datensätze der Datenbank zur Ganzheitlichen Bilanzierung. LBP, Universität Stuttgart und Sphera Solutions Pvt Ltd GmbH
- ISO 14020:2000 Environmental labels and declarations - General principles
- ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- ISO 14040:2006 Environmental management- Life cycle assessment - Principles and framework
- ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
- PCR 2019:14, Product Category Rules (PCR) for 'CONSTRUCTION PRODUCT' Version 1.3.2