

Environmental Product Declaration

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

TG & TGX geogrids

from

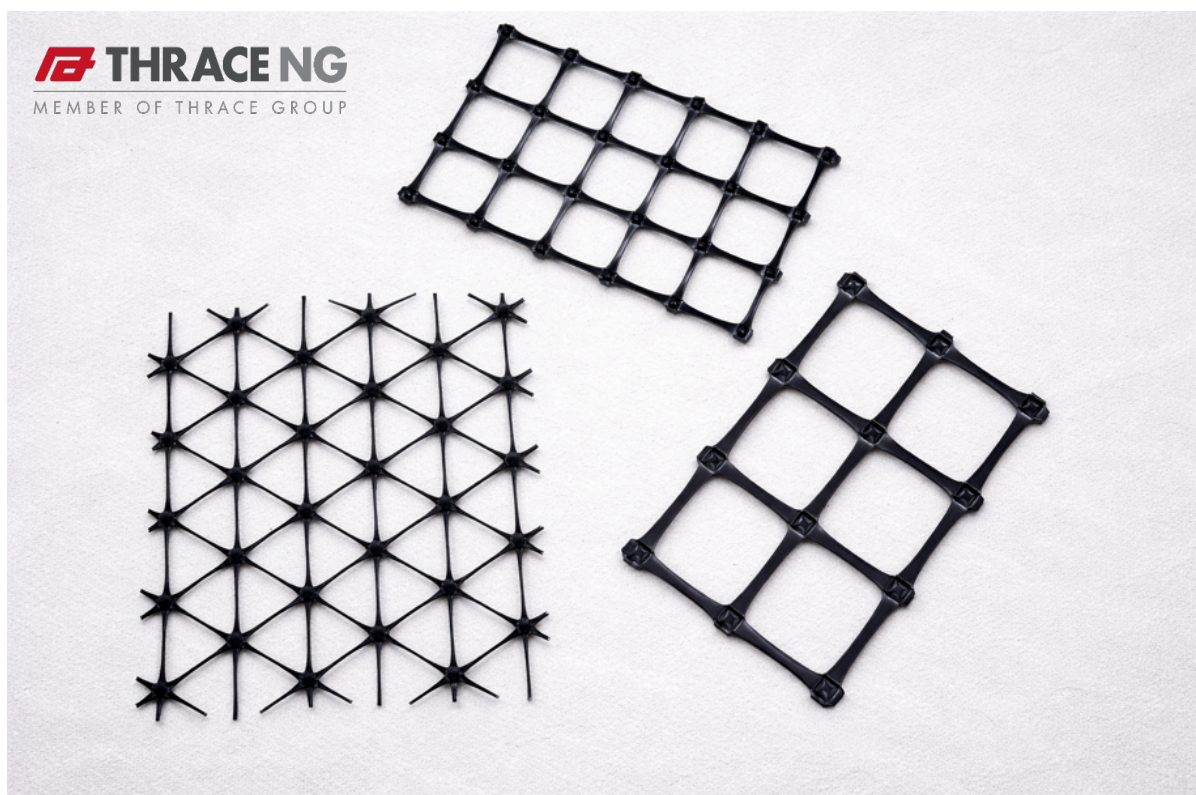
Thrace Nonwovens & Geosynthetics S.A.



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	Type A
EPD registration number:	EPD-IES-0002483:002 (S-P-02483)
Version date:	2026-07-01
Validity date:	2031-06-30

EPD of multiple products, based on the average results of the product group – see Product Information section for details on the products covered.

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>PCR 2019:14 Construction products (EN 15804+A2) (2.0.1)</i>
PCR review was conducted by: <i>The Technical Committee of the International EPD® System, Contact via info@environdec.com</i>
c-PCR, if applicable: <i>None</i>

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: Eurocert S.A. Eurocert S.A. is an approved certification body accountable for the third-party verification. The certification body is accredited by: Hellenic Accreditation System SA (E.S.Y.D), Accreditation number 21-8

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 published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

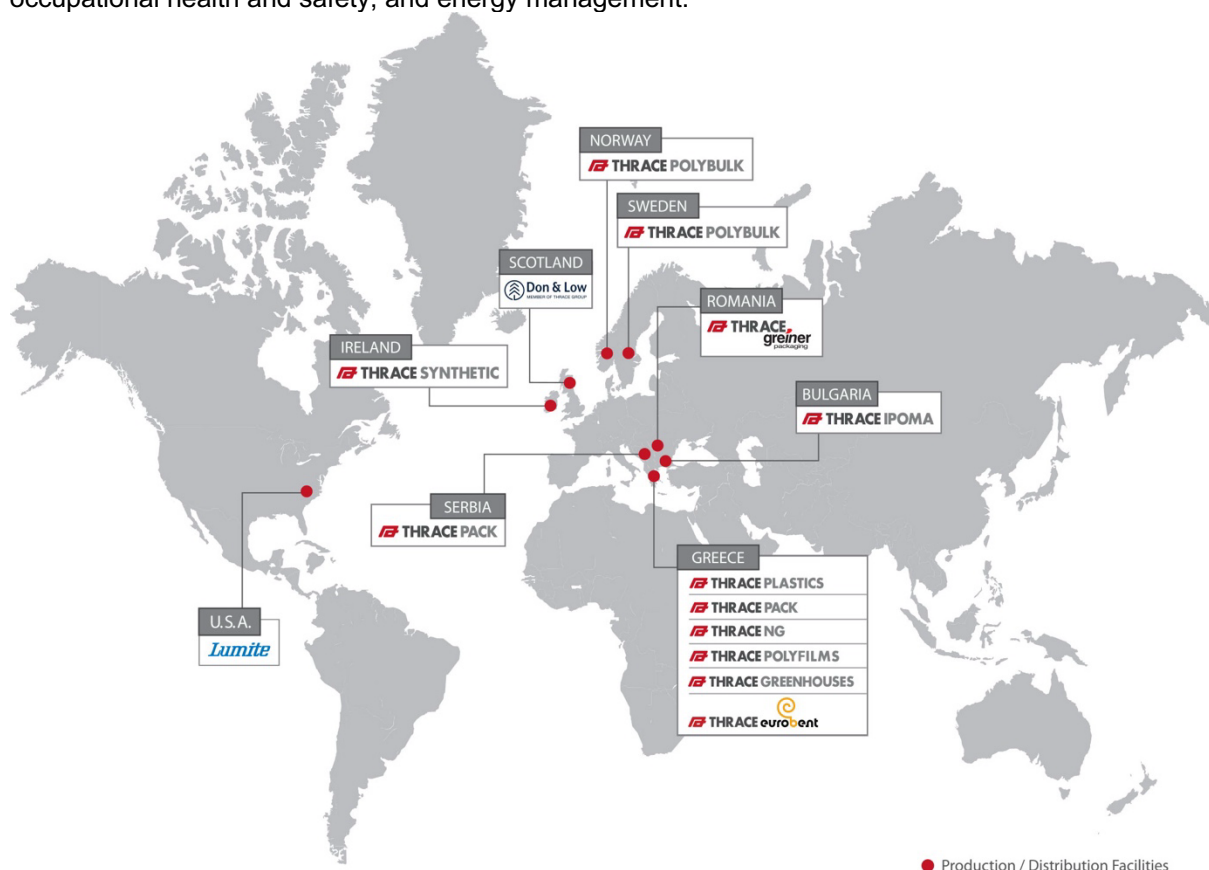
INFORMATION ABOUT EPD OWNER

Owner of the EPD: **Thrace Nonwoven & Geosynthetics SA**
Address: Magiko, 671 00 Xanthi, Greece
Contact: Mrs. Athina Papadaniil, apapadaniil@thraceplastics.gr
 Mr. Kyriakos Mystikos, kmystikos@thraceplastics.gr
 Mr. Konstantinos Emmanouil, kemmanouil@thraceplastics.gr

Description of the organization:

THRACE Group has been active in polypropylene conversion since 1977 and manufactures technical fabrics and packaging products for a range of applications. The Group operates in 10 countries and uses 28 production technologies across its activities. THRACE Group supplies products to customers in more than 80 countries. Its operations include vertically integrated production processes and quality control activities relevant to the products manufactured.

Thrace Nonwovens & Geosynthetics S.A. (Thrace NG) is part of THRACE Group and operates at Magiko, Xanthi, Greece. The site is historically significant for the Group, as it is linked to the original development of THRACE Group's polypropylene conversion activities. Thrace NG is also one of the Group's largest operating companies, based on its production activities and role within the technical fabrics and geosynthetics sector. The company manufactures nonwoven geotextiles and related geosynthetic products for civil engineering, infrastructure, hydraulic and environmental applications. Thrace NG operates certified management systems covering quality, environmental management, occupational health and safety, and energy management.



THRACE geosynthetics are used in civil, geotechnical, hydraulic and environmental engineering applications. The products support functions such as reinforcement, stabilization, separation, filtration, drainage and protection, depending on the selected product type and application. TG and TGX geogrids are polypropylene geosynthetic products used mainly for reinforcement and stabilization applications in infrastructure and earthworks.

Product-related or management system-related certifications:

CE mark for geogrids

ISO 9001 – Quality Management System

ISO 14001 – Environmental Management System

ISO 45001 – Health & Safety Management System

ISO 50001 – Energy Management System

PRODUCT INFORMATION

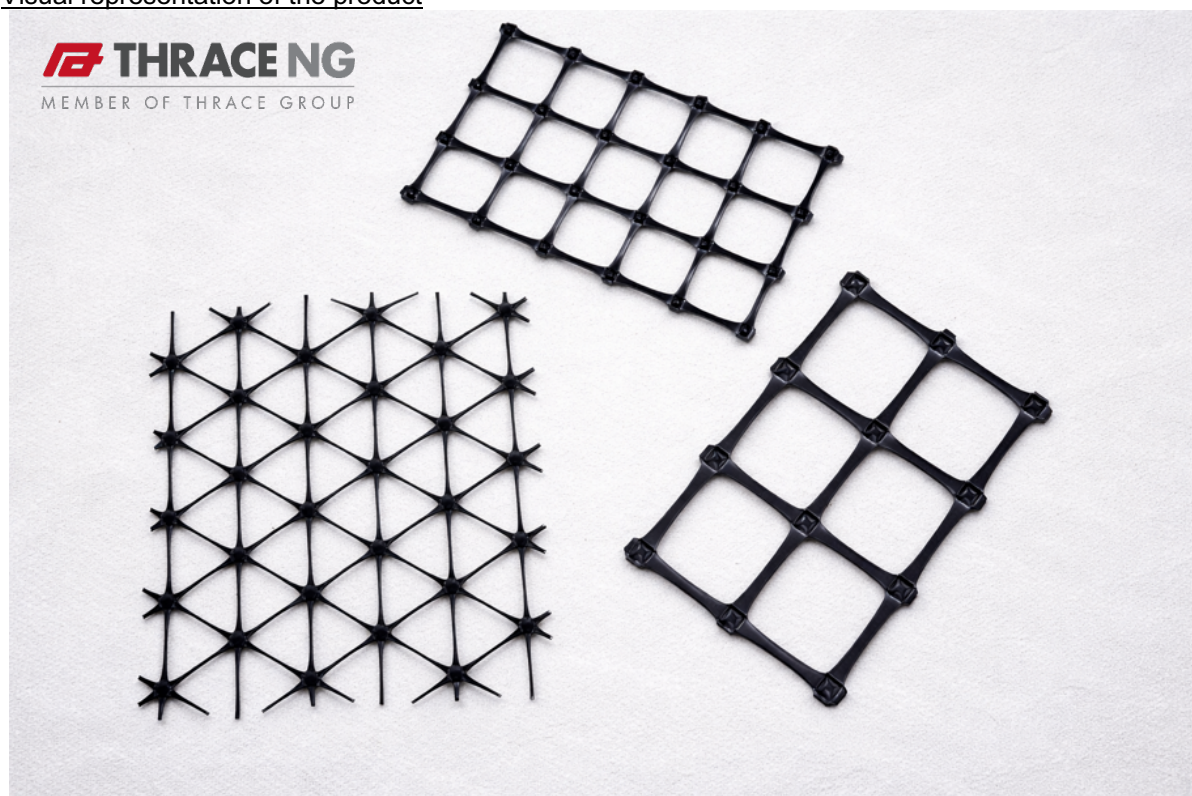
Product name: **TG & TGX geogrids**

Product identification:

Brand name	Products
TG	TG1, TG2, TG1515, TG1600, TG2000S, TG2020S, TG2020L, TG2525, TG3000S, TG3030S, TG3030L, TG3333L, TG4000L, TG4000S, TG4040S, TG4040L, TG5000S, TG5050S
TGX	TGX4, TGX5, TGX6, TGX7, TGX8

Since TG and TGX geogrids are open-grid geosynthetic products, thickness is not represented by a continuous sheet thickness. Thickness is measured at defined points of the grid structure, namely at the rib midpoints ribs and rib junctions. For EPD declaration purposes, the declared thickness is based on the sales-weighted average junction thickness, T_j , representing the maximum profile thickness of the open-grid product. Based on 2025 sales and QC data, the average junction thickness is 4.64 mm (0.00464 m). The corresponding average MD and CD rib thicknesses are 2.15 mm and 1.71 mm, respectively. The declared average product has a mass per unit area of 321.6 g/m², calculated from the declared mass of 321.6 kg per declared unit of 1,000 m².

Visual representation of the product





UN CPC code: 36990 Geogrids

HS Code: 3926.90 Geogrids

Other codes for product classification: Not applicable

Product Variants and Applications

This EPD covers multiple TG and TGX polypropylene geogrid products manufactured by Thrace Nonwovens & Geosynthetics S.A. The declared results represent the average environmental performance of the product group per declared unit of 1,000 m². The covered products have the same raw material formulation and differ mainly in mass per unit area, thickness, tensile strength, aperture geometry and product style, as reflected in the product-specific conversion factors. Product variation in A1–A3 GWP-fossil is below 10%. TG geogrids are used for reinforcement and stabilization in applications such as roads, railways, earthworks, retaining structures and other geotechnical works. TGX geogrids are intended for stabilization applications. The products are supplied in roll form and are manufactured at the company's production site in Magiko, Xanthi, Greece.

Name and location of production site(s):

Thrace Nonwovens & Geosynthetics S.A., Magiko, 671 00 Xanthi, Greece.

Name of manufacturer:

Thrace Nonwovens & Geosynthetics S.A.

CONTENT DECLARATION

The mass of one unit of product, per declared unit (without packaging):

321.6 kg

Declared unit:

1000 m²

The average product declared in this EPD represents the production-weighted average of the TG and TGX polypropylene geogrid product family covered by the declaration. The included products have the same basic material composition and manufacturing route and differ mainly in mass per unit area, thickness, tensile strength, aperture geometry and product style. The content declaration and environmental results are reported for a representative declared unit of 1,000 m², corresponding to 321.6 kg of product, based on the average material composition and production data for the 2025 reference year. The average product is a calculation basis for the product family and does not represent one specific commercial article; values for individual product grades may differ. Technical characteristics, product-specific performance values and declared uses are provided in the relevant product datasheets and Declarations of Performance (DoP), where applicable. As this EPD covers an average product for a family of polypropylene geogrids, the content declaration represents the average material composition per declared unit and does not replace product-specific technical documentation. Users shall refer to the applicable datasheet and DoP for the selected product grade when assessing suitability for a specific application.

Content of the product in the form of a list of materials and substances, and their mass:

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Polypropylene	314.8	0	0	0
Masterbatch	6.8	0	0	0
TOTAL	321.6	0	0	0

Mass of packaging per declared unit of product: 0 kg

Information on the environmental and hazardous/toxic properties of a substances contained in the product: The product does not contain substances listed in the REACH Candidate List of Substances of Very High Concern (SVHC) in concentrations exceeding 0.1% by weight.

Other information on substances with hazardous and toxic properties: No other hazardous substances relevant for human health or the environment are intentionally added to the product.

The declared share of recycled materials per declared unit of product: The declared share of recycled materials per declared unit of product is 0 kg. Internal rework material is used within the production process but is not declared as post-consumer recycled material.

Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
None	-	-	0%

LCA INFORMATION

The mass of one unit of product, per declared unit (without packaging):

321.6 kg

Declared unit:

1000 m²

This EPD is declared as Type A: cradle to gate with modules C1–C4 and Module D. This scope was selected because the products are construction products for which the production stage, end-of-life stage and benefits and loads beyond the system boundary can be modelled using a declared unit, while transport to the customer, installation and use-stage conditions are application- and project-specific and are therefore not declared.

For the impact assessment, an average product was defined as the reference product. As the products covered by this EPD are homogeneous on a mass basis per declared unit, the average product is representative of the composition of all products included within the declared family. The individual products differ only in selected physical and mechanical characteristics, including mass per unit area, thickness, tensile strength, and elongation.

All environmental performance indicators were calculated with reference to this average product. As a mathematical construct, this average product does not correspond to a physically existing commercial article. Product-specific results may be estimated from the declared average results using the conversion factors provided below. The product variation for modules A1–A3 is below 10% for GWP-fossil, based on the product grouping assessment. Packaging is declared as 0 kg per declared unit and is not used as a differentiating parameter for best-case or worst-case scenarios in this EPD.

Conversion factors

Style	Factor
TG1	0.7371
TG2	1.0416
TG1515	0.6089
TG2020S	0.7211
TG2020L	0.7532
TG2525	0.9294
TG3030S	1.0416
TG3030L	1.0737

Style	Factor
TG3333L	1.1217
TG4040L	1.5704
TG4040S	1.5063
TG1600	1.1217
TG5050S	1.9550
TG2000S	0.7532
TG3000S	1.0897
TG4000S	1.5384

Style	Factor
TG3000S	1.0897
TG4000L	1.6025
TG5000S	2.1153
TGX4	0.6410
TGX5	0.7532
TGX6	0.8012
TGX7	0.9935
TGX8	1.1538

Reference service life: No reference service life is declared in this EPD because modules B1–B7 are not declared and the EPD is based on a declared unit. TG and TGX geogrids are designed for long-term use in the intended civil engineering and construction applications when properly selected, installed and used in accordance with the relevant product datasheets, Declarations of Performance and project specifications. The service performance of a specific product depends on the selected grade, installation conditions, exposure conditions, soil environment and project design requirements. Any durability or service-life information provided in product-specific technical documentation shall not be interpreted as an additional life-cycle scenario declared in this EPD.

Time representativeness: Data cover a calendar year, reference year 2025.

Geographical scope: The geographical scope of the study is Europe. The manufacturing processes are located in Xanthi, Greece. Raw materials originate from Europe and the Middle East, with supplier-specific transport assumptions modelled where available.

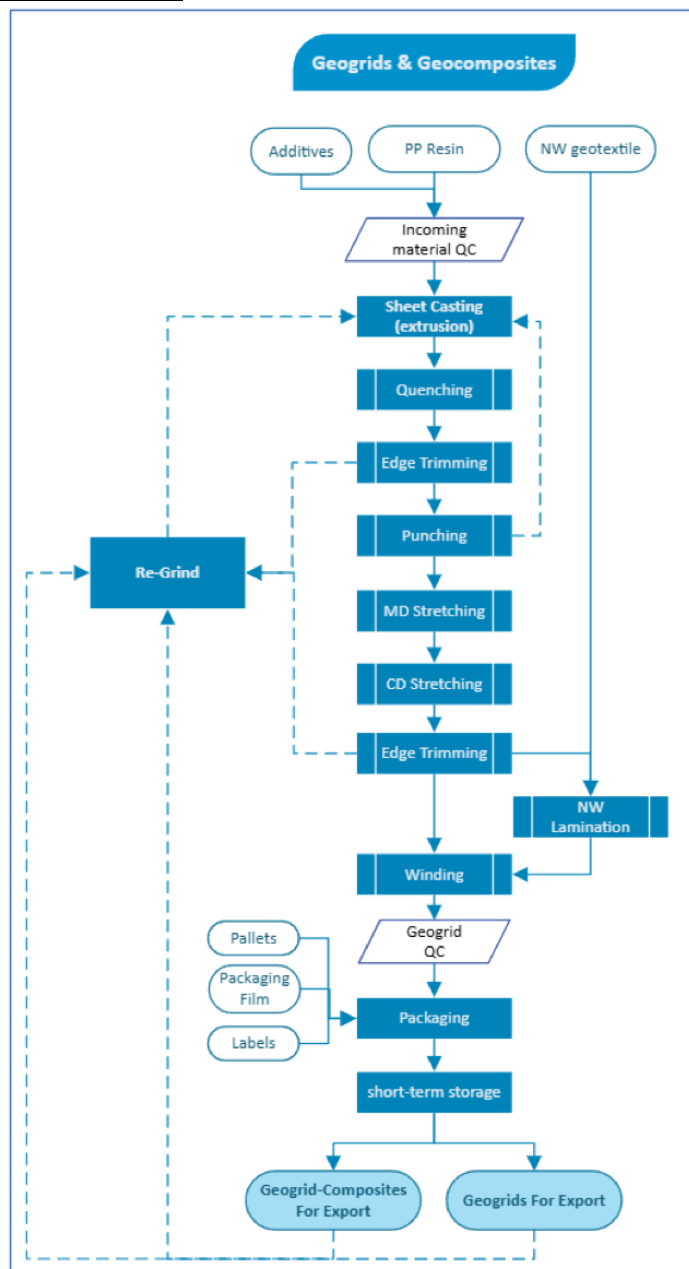
Database(s) and LCA software used: One Click LCA EPD Generator, using One Click LCA background datasets, ecoinvent 3.10.1 / 3.11 / 3.12 datasets and EPD resources as documented in the LCA background report.

EPD/LCA Tool used: One Click LCA EPD Generator

Description of system boundaries:

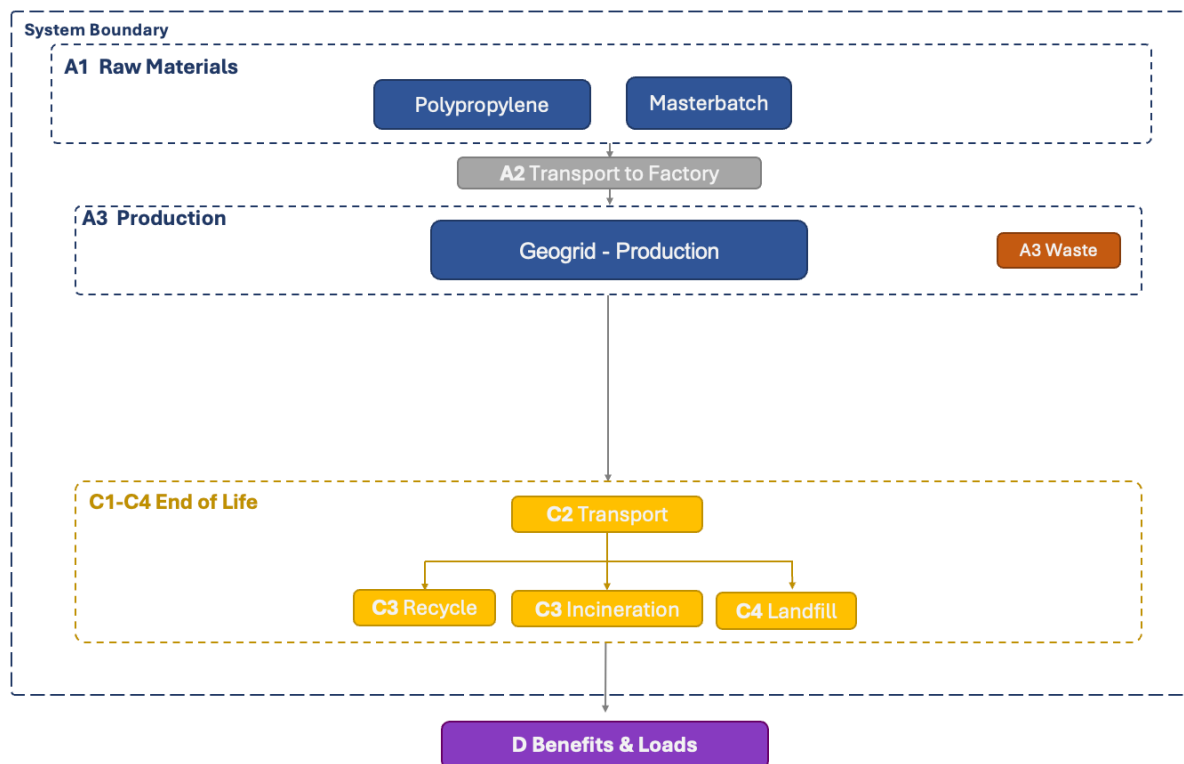
EPD Type A: Cradle to gate and modules C1-C4, D. The Use stage (B1–B7) is not mandatory and is not included within the scope of this study.

Production Process flow diagram:



The process flow diagram illustrates the geogrid production route. Branches related to nonwoven geotextile lamination and geocomposite products are shown for site-process context only and are not part of the declared TG and TGX geogrid product system covered by this EPD.

System Boundaries: Module D is included in this study and EPD to report potential benefits and loads beyond the product system boundary, even though it is not part of the product life-cycle modules A1–C4. The reported Module D results represent potential credits and loads associated with recycling and energy recovery from incineration at end of life and are declared separately from the life-cycle impacts. This maintains the modular structure of the EPD while providing additional information on potential recovery benefits beyond the system boundary.



Allocation: The declared TG and TGX geogrid products are modelled as a multiple-product group with the same raw material formulation and manufacturing route, differing mainly in mass per unit area, thickness, tensile strength, aperture geometry and product style. Where allocation was required for shared production-level data, including ancillary materials, energy consumption and waste production, inputs and outputs were allocated to the studied products based on annual production volumes using mass allocation. Raw material composition is based on the declared product mass and bill of materials. The allocations in the ecoinvent 3.10.1, 3.11 and 3.12 datasets used in this study follow the ecoinvent system model “Allocation, cut-off, EN 15804”.

In-house rework material generated during production is collected, reprocessed on site and returned to the manufacturing process. For allocation purposes, the reprocessing burden of this material, mainly electricity used during regranulation and related handling, is assigned according to the polluter pays principle. This means that the product system generating the rework material carries the burden required to make it suitable for reuse in production, rather than transferring this burden to the subsequent process where the rework material is consumed. The material is therefore treated as an internal closed-loop rework flow within the manufacturing system and not as externally sourced recycled material.

GWP-GHG intensity of recycled material: Nothing to report

Data quality:

Specific data is determined by its contribution to the total GWP indicator within the "specific" data category. In stages A1-A3, the following data point types are classified as "specific":

1. EPDs and private data points.
2. Processes including energy, transport, and direct process emissions.

"Manufacturing waste" is treated as generic data as a conservative approach, acknowledging potential use of generic information due to data limitations in some scenarios.

The percentage of specific data used is calculated as: $\text{Specific data used (\%)} = (\text{GWP-fossil of all specific data} / \text{GWP-fossil of A1-A3}) * 100$

In this EPD study, the percentage of specific data utilized is: 84.1 %.

The share of primary data is calculated based on GWP-GHG results. It is simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicators do not capture all relevant aspects of data quality and is not comparable across product categories.

The primary data used in this LCA study cover one full calendar year of operation, corresponding to the 2025 reference year.

The hotspot analysis was performed for the declared A1–A3 GWP-GHG result. The A1–A3 GWP-GHG result is 612 kg CO₂ eq. per declared unit; therefore, the 10% relevance threshold is 61.2 kg CO₂ eq. The processes exceeding this threshold are A1 raw material supply, mainly polypropylene resin and other fossil-based inputs, and A3 manufacturing energy, mainly grid electricity used during extrusion, punching/perforation, machine-direction and cross-machine-direction drawing, trimming, roll formation and related TG and TGX geogrid production operations. Masterbatch, inbound transport, ancillary materials, internal production losses, rework handling, production waste treatment, photovoltaic electricity and natural gas are included in the model but are not identified as separate >10% contributors based on the available contribution screening.

Process / data point contributing >10% to A1–A3 GWP-GHG	Polypropylene resin and other fossil-based raw materials	Manufacturing energy, mainly grid electricity	Other A1–A3 processes below the 10% threshold
Module	A1	A3	A1–A3
Main primary data used	Bill of materials, declared product mass, raw material input quantities, supplier/material information, masterbatch input quantities and production losses	Site-specific 2025 energy consumption for TG and TGX geogrid production, including grid electricity, photovoltaic electricity and natural gas per declared unit	Packaging quantities, raw material transport distances, production waste data, lubricants, rework handling and ancillary flows
Source type	Collected data + EPD/database	Collected data + database	Collected data + database
Source	EPD owner production data; supplier/material information; EPD for PP resin used; ProBas and ecoinvent datasets for polymer/additive inputs	EPD owner energy data; ecoinvent electricity, medium voltage, residual mix, Greece; ecoinvent photovoltaic electricity dataset; ecoinvent natural gas heat dataset	EPD owner data; ecoinvent / One Click LCA background datasets
Reference year	2025 activity data; 2023–2025 background data	2025 activity data; 2024–2025 background datasets	2025 activity data; 2024–2025 background datasets
Data category	Primary activity data with secondary environmental data	Primary activity data with representative secondary environmental data	Mixed primary activity data and secondary environmental data
Estimated contribution to A1–A3 GWP-GHG	Approx. 207 kg CO ₂ eq., or 33.9%, based on residual contribution after manufacturing energy screening	Approx. 405 kg CO ₂ eq., or 66.1%; grid electricity alone approx. 347 kg CO ₂ eq., or 56.7%	Individually <10%
Share of contribution from primary data	Activity data primary; upstream production datasets secondary unless supplier-specific EPD data are used	Activity data primary; energy/fuel emission factors from database	Not reported per process
Representativeness and data quality comment	Very good inventory representativeness because product composition is based on 2025 production data for the declared TG/TGX geogrid product group. Environmental data quality is good to very good, depending on whether supplier-specific EPD data or database datasets are used for polypropylene and additives.	Very good inventory representativeness because energy consumption is based on site-specific 2025 manufacturing data for TG/TGX geogrid production. Environmental data quality is good to very good, depending on the final electricity, photovoltaic electricity and natural gas datasets used in the verified LCA model.	Included for completeness. These flows do not represent principal hotspots for A1–A3 GWP-GHG based on the available interpretation.

Modelling of infrastructure/capital goods: 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.

Cut-off rules: The management of packaging waste is excluded from this LCA study as it falls under module A5, which is not declared in this Type A EPD. The declared packaging mass is 0 kg per declared unit; therefore, no biogenic carbon embodied in packaging is declared for the product system.

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 are available are included in the calculation. There is no neglected unit process representing more than 1% of total mass or energy flows. The module-specific total neglected input and output flows do not exceed 5% of energy use or mass.

Electricity modelling: The source of purchased electricity is a consumption mix, medium voltage, residual mix for Greece, with a GWP-GHG emission factor of 0.76 kg CO₂e/kWh, as documented in the manufacturing energy scenario. This dataset represents the residual mix at medium-voltage level in Greece and reflects untracked electricity consumption, i.e., electricity consumption that is not explicitly tracked through mechanisms such as Guarantees of Origin (GO). On-site photovoltaic electricity is modelled separately using the photovoltaic electricity dataset documented in the manufacturing energy scenario.

Characterization methods for all declared environmental performance indicators: Characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1 have been used throughout the study.

DESCRIPTION OF UPSTREAM AND CORE PROCESSES:

MANUFACTURING AND PACKAGING (A1-A3)

The A1–A3 product stage covers raw material supply, transport of raw materials to the manufacturing site, and the manufacturing of TG and TGX polypropylene geogrids at Thrace Nonwovens & Geosynthetics S.A. in Magiko, Xanthi, Greece. The main product inputs are polypropylene resin and approved masterbatches.

The considered transportation impacts include exhaust emissions resulting from transportation of raw materials from suppliers to manufacturing facilities as well as the environmental impacts of the production of the diesel used. The manufacturing, maintenance and disposal of the vehicles as well as tyre and road wear during transportation have also been included. The transportation distances and methods were provided by the Manufacturer.

The environmental impacts considered for the production stage cover the manufacturing of materials used in the production but not included in the final products such as packaging materials and other ancillary materials. Also, fuels used by machines, as well as handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study considers also the losses occurring during the manufacturing processes. Also, the transmission losses of energy have been included.

Manufacturing energy scenario documentation

1. Market for heat, district or industrial, natural gas, World, Ecoinvent, 0.0389 kgCO₂e/MJ
2. Electricity, medium voltage, residual mix, Greece, Ecoinvent, 0.76 kgCO₂e/kWh
3. Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, Greece, Ecoinvent, 0.0672 kgCO₂e/kWh

TRANSPORT AND INSTALLATION (A4-A5)

Transportation of raw materials to the production site (module A2) and transportation of the products to the customer (module A4) contribute to the environmental impacts mainly through fuel combustion and

associated emissions from freight transport. Considering the variety of the customers we supply to and the nature of our business model being B2B – thus supplying intermediate companies, rather than end-users – we cannot reliably calculate or estimate the distance to the use/installation site or the methods of transport. We therefore avoid unnecessary inaccuracies and exclude module A4 (transportation to the customer). The end customer can more easily and reliably calculate this impact when required.

PRODUCT USE AND MAINTENANCE (B1-B7)

Modules B1–B7 are not declared in this EPD. No use-stage energy use, water use, maintenance, repair, replacement or refurbishment is declared for the product.

PRODUCT END OF LIFE (C1-C4)

End of life (C1-C4) - Scenario documentation

Scenario parameter	Value
Collection process: collected separately (kg)	321.6
Collection process: Mixed waste (kg)	0.0
Recovery: re-use (kg)	0.0
Recovery: recycling (kg)	75.3
Recovery: energy recovery (kg)	163.6
Disposal (kg)	88.3
Scenario assumptions e.g. transportation (mode, km) & other	50 km by lorry to waste treatment. End-of-life scenario: 23% recycling, 27% landfill and 50% incineration. C3 represents recycling-related waste processing; C4 represents final disposal by landfill and incineration; Module D reports benefits from recycling and energy recovery.

The end-of-life scenario is based on a representative European treatment split of 23% recycling, 27% landfill and 50% incineration. For the declared unit of 321.6 kg, this corresponds to approximately 75.3 kg sent to recycling, 88.3 kg sent to landfill and 163.6 kg sent to incineration. C2 accounts for transport to waste treatment, C3 accounts for recycling-related waste processing, C4 accounts for final disposal through landfill and incineration, and Module D reports potential benefits from recycling and energy recovery beyond the system boundary.

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

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling- potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	GR	ND	ND	ND	ND	ND	ND	ND	ND	ND	EU	EU	EU	EU	EU
Share of primary data	84.1%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

Mandatory impact category indicators according to EN 15804

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,16E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	1,04E+02	3,47E+02	-3,03E+02
GWP-fossil	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	1,04E+02	3,47E+02	-3,03E+02
GWP-biogenic	kg CO ₂ eq.	3,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,80E-04	-3,13E-03	-1,05E-02	0,00E+00
GWP-luluc	kg CO ₂ eq.	1,80E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,21E-04	2,02E-03	6,76E-03	-2,82E-01
ODP	kg CFC 11 eq.	3,10E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,77E-08	2,71E-08	9,09E-08	-9,80E-06
AP	mol H ⁺ eq.	2,23E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,71E-03	1,87E-02	6,27E-02	-1,38E+00
EP-freshwater	kg P eq.	3,10E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,22E-04	4,51E-04	1,51E-03	-1,21E-01
EP-marine	kg N eq.	4,06E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,94E-03	1,44E-02	4,81E-02	-2,14E-01
EP-terrestrial	mol N eq.	3,58E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,11E-02	8,53E-02	2,86E-01	-2,17E+00
POCP	kg NMVOC eq.	1,48E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,05E-03	2,32E-02	7,78E-02	-1,32E+00
ADP-minerals & metals*	kg Sb eq.	3,53E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,96E-06	1,35E-05	4,50E-05	-1,61E-03
ADP-fossil*	MJ	1,45E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	2,35E+01	7,85E+01	-7,92E+03
WDP*	m ³	3,85E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,47E-01	2,97E+00	9,93E+00	-8,33E+01
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 on these results are high or as there is limited experienced with the indicator.

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

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). For services, "A1-A3" shall be replaced by "A1-A5".

Additional mandatory and voluntary impact category indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	1,04E+02	3,47E+02	-3,03E+02

¹ This 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.

Resource use indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	1,47E+00	4,94E+00	-6,50E+02
PERM	MJ	2,05E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	1,47E+00	4,94E+00	-6,50E+02
PENRE	MJ	6,86E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	-2,97E+03	-9,93E+03	-8,65E+03
PENRM	MJ	7,45E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,82E-03	-6,08E-03	2,47E+03
PENRT	MJ	1,43E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	-2,97E+03	-9,93E+03	-6,19E+03
SM	kg	9,54E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E-02	7,59E-02	2,54E-01	7,88E+01
RSF	MJ	1,15E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,41E-04	5,70E-04	1,91E-03	-7,71E-03
NRSF	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,44E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,41E-03	-5,11E-02	-1,71E-01	-2,88E+00
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															

Waste indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,93E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,68E-02	1,00E+00	3,35E+00	-1,53E+01
Non-hazardous waste disposed	kg	1,56E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,51E-01	1,46E+02	4,89E+02	-1,88E+03
Radioactive waste disposed	kg	2,94E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,94E-06	2,32E-05	7,78E-05	-1,61E-02

Output flow indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,73E+01	5,80E+01	0,00E+00
Materials for energy recovery	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	4,67E+02	1,56E+03	0,00E+00
Exported energy, thermal	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,96E+02	6,58E+02	0,00E+00

Annex I. 100% scenarios

The table below shows the required impact category indicators, in line with EN 15804, for the end-of-life scenarios of 100% recycling, 100% disposal and 100% incineration:

100% recycling

Mandatory impact category indicators according to EN 15804

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,16E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	5,46E+01	0,00E+00	-3,20E+02
GWP-fossil	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	5,46E+01	0,00E+00	-3,19E+02
GWP-biogenic	kg CO ₂ eq.	3,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,80E-04	-2,27E-02	0,00E+00	0,00E+00
GWP-luluc	kg CO ₂ eq.	1,80E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,21E-04	2,98E-02	0,00E+00	-5,06E-01
ODP	kg CFC 11 eq.	3,10E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,77E-08	1,46E-07	0,00E+00	-3,78E-06
AP	mol H ⁺ eq.	2,23E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,71E-03	8,57E-02	0,00E+00	-2,05E+00
EP-freshwater	kg P eq.	3,10E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,22E-04	5,55E-03	0,00E+00	-2,04E-01
EP-marine	kg N eq.	4,06E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,94E-03	5,44E-02	0,00E+00	-2,96E-01
EP-terrestrial	mol N eq.	3,58E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,11E-02	2,69E-01	0,00E+00	-2,90E+00
POCP	kg NMVOC eq.	1,48E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,05E-03	8,10E-02	0,00E+00	-9,29E-01
ADP-minerals & metals*	kg Sb eq.	3,53E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,96E-06	1,95E-04	0,00E+00	-3,77E-04
ADP-fossil*	MJ	1,45E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	1,65E+02	0,00E+00	-5,25E+03
WDP*	m ³	3,85E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,47E-01	7,78E+00	0,00E+00	-1,03E+02
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 on these results are high or as there is limited experienced with the indicator.

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

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). For services, "A1-A3" shall be replaced by "A1-A5".

Additional mandatory and voluntary impact category indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ²	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	5,46E+01	0,00E+00	-3,20E+02

Resource use indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	2,19E+01	0,00E+00	-1,12E+03
PERM	MJ	2,05E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	2,19E+01	0,00E+00	-1,12E+03
PENRE	MJ	6,86E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	-1,37E+04	0,00E+00	-5,25E+03
PENRM	MJ	7,45E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-7,90E-03	-8,78E-04	0,00E+00
PENRT	MJ	1,43E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	-1,37E+04	-8,78E-04	-5,25E+03
SM	kg	9,54E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E-02	1,09E+00	0,00E+00	-5,38E-01
RSF	MJ	1,15E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,41E-04	8,83E-03	0,00E+00	-2,48E-03
NRSF	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,44E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,41E-03	1,18E-01	0,00E+00	-4,07E+00
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															

Waste indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,93E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,68E-02	3,45E+00	0,00E+00	-2,36E+01
Non-hazardous waste disposed	kg	1,56E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,51E-01	1,07E+02	0,00E+00	-1,00E+03
Radioactive waste disposed	kg	2,94E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,94E-06	3,63E-04	0,00E+00	-2,66E-02

² This 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.

Output flow indicators

Results per declared unit (per 1000m²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,27E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,03E+03	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,54E+02	0,00E+00	0,00E+00

100% landfilling

Mandatory impact category indicators according to EN 15804

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,16E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	0,00E+00	3,92E+01	-3,20E+02
GWP-fossil	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	0,00E+00	3,92E+01	-3,19E+02
GWP-biogenic	kg CO ₂ eq.	3,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,80E-04	0,00E+00	-2,06E-02	0,00E+00
GWP-luluc	kg CO ₂ eq.	1,80E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,21E-04	0,00E+00	2,39E-03	-5,06E-01
ODP	kg CFC 11 eq.	3,10E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,77E-08	0,00E+00	9,46E-08	-3,78E-06
AP	mol H ⁺ eq.	2,23E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,71E-03	0,00E+00	2,60E-02	-2,05E+00
EP-freshwater	kg P eq.	3,10E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,22E-04	0,00E+00	3,85E-04	-2,04E-01
EP-marine	kg N eq.	4,06E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,94E-03	0,00E+00	8,66E-02	-2,96E-01
EP-terrestrial	mol N eq.	3,58E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,11E-02	0,00E+00	1,06E-01	-2,90E+00
POCP	kg NMVO C eq.	1,48E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,05E-03	0,00E+00	4,61E-02	-9,29E-01
ADP-minerals&metals*	kg Sb eq.	3,53E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,96E-06	0,00E+00	8,25E-06	-3,77E-04
ADP-fossil*	MJ	1,45E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	0,00E+00	8,13E+01	-5,25E+03
WDP*	m ³	3,85E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,47E-01	0,00E+00	3,98E-01	-1,03E+02
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 on these results are high or as there is limited experienced with the indicator.

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

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). For services, "A1-A3" shall be replaced by "A1-A5".

Additional mandatory and voluntary impact category indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ³	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	0,00E+00	3,92E+01	-3,20E+02

³ This 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.

Resource use indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	0,00E+00	1,27E+00	-1,12E+03
PERM	MJ	2,05E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	0,00E+00	1,27E+00	-1,12E+03
PENRE	MJ	6,86E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	0,00E+00	-1,27E+04	-5,25E+03
PENRM	MJ	7,45E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	-7,90E-03	0,00E+00
PENRT	MJ	1,43E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	0,00E+00	-1,27E+04	-5,25E+03
SM	kg	9,54E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E-02	0,00E+00	2,94E-02	-5,38E-01
RSF	MJ	1,15E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,41E-04	0,00E+00	5,51E-04	-2,48E-03
NRSF	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,44E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,41E-03	0,00E+00	-1,21E+00	-4,07E+00
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															

Waste indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,93E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,68E-02	0,00E+00	1,43E-01	-2,36E+01
Non-hazardous waste disposed	kg	1,56E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,51E-01	0,00E+00	1,63E+03	-1,00E+03
Radioactive waste disposed	kg	2,94E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,94E-06	0,00E+00	1,98E-05	-2,66E-02

Output flow indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	ND	ND	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 recovery	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,03E+03	0,00E+00
Exported energy, thermal	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	8,54E+02	0,00E+00

100% Incineration

Mandatory impact category indicators according to EN 15804

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	6,16E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	0,00E+00	8,57E+02	-3,20E+02
GWP-fossil	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	0,00E+00	8,57E+02	-3,19E+02
GWP-biogenic	kg CO ₂ eq.	3,32E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,80E-04	0,00E+00	-5,68E-03	0,00E+00
GWP-luluc	kg CO ₂ eq.	1,80E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,21E-04	0,00E+00	2,56E-03	-5,06E-01
ODP	kg CFC 11 eq.	3,10E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,77E-08	0,00E+00	1,18E-07	-3,78E-06
AP	mol H ⁺ eq.	2,23E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,71E-03	0,00E+00	1,09E-01	-2,05E+00
EP-freshwater	kg P eq.	3,10E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,22E-04	0,00E+00	1,17E-03	-2,04E-01
EP-marine	kg N eq.	4,06E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,94E-03	0,00E+00	5,32E-02	-2,96E-01
EP-terrestrial	mol N eq.	3,58E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,11E-02	0,00E+00	5,62E-01	-2,90E+00
POCP	kg NMVOC eq.	1,48E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,05E-03	0,00E+00	1,39E-01	-9,29E-01
ADP-minerals & metals*	kg Sb eq.	3,53E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,96E-06	0,00E+00	2,27E-05	-3,77E-04
ADP-fossil*	MJ	1,45E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	0,00E+00	8,43E+01	-5,25E+03
WDP*	m ³	3,85E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,47E-01	0,00E+00	2,19E+01	-1,03E+02
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 on these results are high or as there is limited experienced with the indicator.

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

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). For services, "A1-A3" shall be replaced by "A1-A5".

Additional mandatory and voluntary impact category indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁴	kg CO ₂ eq.	6,12E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,73E+00	0,00E+00	8,57E+02	-3,20E+02

⁴ This 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.

Resource use indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	2,06E+00	0,00E+00	-1,12E+03
PERM	MJ	2,05E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,25E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,89E-01	2,06E+00	0,00E+00	-1,12E+03
PENRE	MJ	6,86E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	-1,26E+04	0,00E+00	-5,25E+03
PENRM	MJ	7,45E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-7,90E-03	-8,78E-04	0,00E+00
PENRT	MJ	1,43E+04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,52E+01	-1,26E+04	-8,78E-04	-5,25E+03
SM	kg	9,54E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,07E-02	1,43E-01	0,00E+00	-5,38E-01
RSF	MJ	1,15E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,41E-04	5,99E-04	0,00E+00	-2,48E-03
NRSF	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,44E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,41E-03	1,55E-01	0,00E+00	-4,07E+00
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															

Waste indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,93E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,68E-02	0,00E+00	7,03E+00	-2,36E+01
Non-hazardous waste disposed	kg	1,56E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,51E-01	0,00E+00	3,44E+02	-1,00E+03
Radioactive waste disposed	kg	2,94E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,94E-06	0,00E+00	2,37E-05	-2,66E-02

Output flow indicators

Results per declared unit (per 1000m ²)																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	ND	ND	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 recovery	kg	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	2,03E+03	0,00E+00
Exported energy, thermal	MJ	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	8,54E+02	0,00E+00

Additional LCA results (other environmental performance results) of the product(s)

Variation of impact between minimum and maximum impact products have been calculated and is presented in the below table. The variation is primarily attributed to packaging difference between different products.

Variation Information

LCA result of one declared unit product (A-C)	Unit	Min	Representative / Average	Max
GWP – total1)	kg CO2 eq.	1.61E+03	1.07E+03	6.55E+02
GWP – fossil	kg CO2 eq.	1.61E+03	1.06E+03	6.54E+02
GWP – biogEnic	kg CO2 eq.	-1.28E+00	3.31E+00	1.00E+00
GWP – LULUC	kg CO2 eq.	2.33E-01	1.89E-01	1.41E-01
OzonE dEplEtion pot.	kg CFC 11 eq.	5.21E-05	3.12E-05	1.95E-05
Acidification potEntial	mol H+ eq.	3.55E+00	2.32E+00	1.46E+00
EP-frEshwatEr2)	kg P eq.	4.15E-01	3.12E-01	1.77E-01
EP-marinE	kg N eq.	7.34E-01	4.70E-01	2.96E-01
EP-tErrEstrial	mol N eq.	6.52E+00	3.97E+00	2.59E+00
POCP (“smog”)3)	kg NMVOC eq.	2.56E+00	1.59E+00	1.04E+00
ADP-minErals & mEtals4)	kg Sb eq.	8.85E+02	3.53E+02	2.62E+02
ADP-fossil rEsourcEs	kg CO2 eq.	2.86E+04	1.46E+04	9.65E+03
WatEr usE5)	kg CO2 eq.	8.64E+02	3.98E+02	2.85E+02

INFORMATION RELATED TO SECTOR EPD

This document covers the average values for an entire product category and, hence, the declared product is an average case that is available for purchase on the market.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
EU	Europe
GR	Greece

REFERENCES

- a) EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
- b) One Click LCA – Life Cycle Assessment software and database, used for modelling the product system.
- c) Ecoinvent database v3.10–3.12, used for background LCA data
- d) EPD International. 2025. General Programme Instructions for the International EPD System, Version 5.0.1. Published 2025-02-27
- e) PCR 2019:14 Construction products, Version 2.0.1. International EPD System.
- f) Plastics Europe. 2022. The Circular Economy for Plastics – A European Overview. Plastics Europe, based on 2020 data. Data by Conversio Market & Strategy GmbH.\

VERSION HISTORY

Version 1, 2021-02-18

Original Version of the EPD according to the PCR 2012:01, v.2.33

Version 2, 2026-07-01

Differences versus the previously published version: transition to the PCR 2019:14, v2.0.1, 2nd 5-year publication cycle.

