Environmental Product Declaration

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

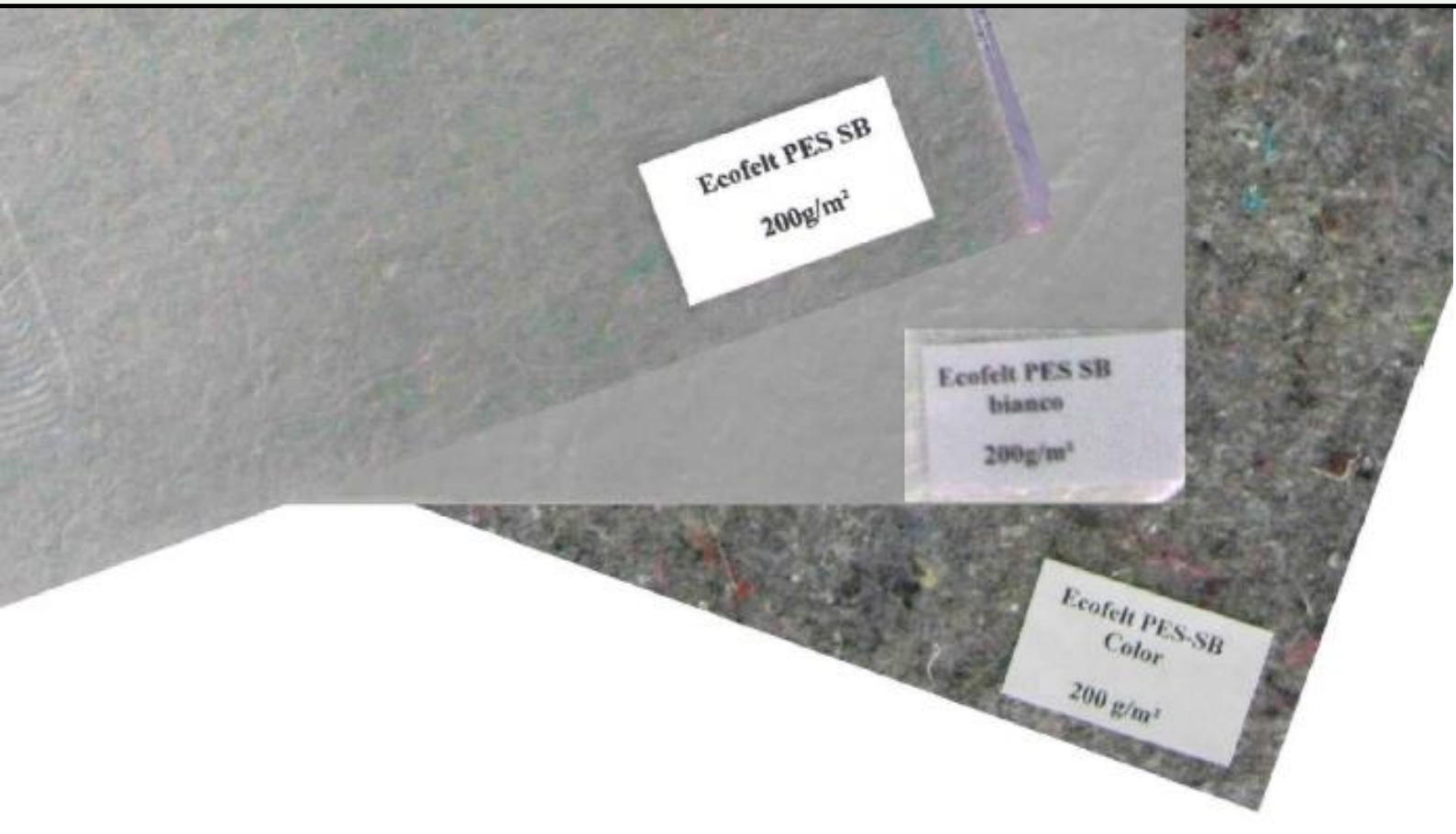
ECOFELT PES-SB geotextile

from

Ecofibre srl

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0017424
Publication date:	2025-05-06
Valid until:	2030-05-05

This is an EPD of multiple products, based on the average results of the product group. Products included: ECOFELT PES SB.
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
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.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 and construction services (v1.3.4)
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC 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: Spin Life S.r.l – Spinoff dell'Università di Padova, via Cerato 14, Padova (PD), Italy
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2010, via: ☒ EPD verification by accredited certification body Third-party verification: *TÜV Italia srl – TÜV Italia srl - 20126 Milano - Viale Fulvio Testi 280/6 – Italy* It is an approved certification body accountable for the third-party verification. The certification body is accredited by: *ACCREDIA - Accreditation certification n. 00077*
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.

This is an EPD of multiple products and the results of each environmental performance indicator are referred to an average product.

Company information

Owner of the EPD: Ecofibre srl - Via Paolo Paoletti, 10 - 51037 Montale (PT) – Italy (for further information: www.ecofibre.it)

Contact: Francesco Niccolai f.niccolai@ecofibre.it , Filippo Villani filippo.villani@ecofibre.it

Description of the organisation: Ecofibre srl (hereinafter referred to as Ecofibre) is specialized in the non-woven geotextiles production sector, both from virgin flakes and regenerated fibres, since the implementation of the first plant to produce non-woven in 1990. Today the company has two plants for geotextile production that allow to produce over 100.000sqm daily of geotextiles for drainage and filtration hydraulic function or reinforcement and protection mechanical functions.

Technical support: Spin Life S.r.l – Spinoff dell'Università di Padova, via Cerato 14, Padova – Italy

Product-related and management system-related certifications: The company is UNI EN ISO 9001:2015 certified and through its Quality Management System can ensure a high standard of quality and process control (current registration number 50 100 6587 from TÜV Italia Srl).
Ecofibre has also achieved some well-known product certifications, such as RVS AUSTRIA with reference to regulation RVS8S.01.2 for public work and IVG GERMANY with reference to IVG voluntary regulation in order to offer the best of the product quality.

Name and location of production site: Ecofibre srl - Via Paolo Paoletti, 10 - 51037 Montale (PT) – Italy

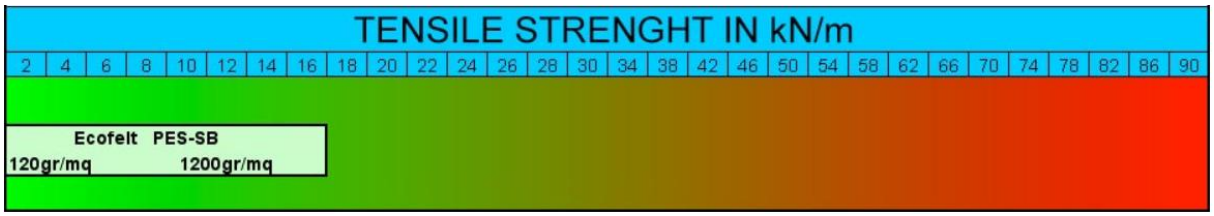
Product information

Product name: Ecofelt PES-SB

Product description and applications:

A geotextile is a product of the textile industry with physical, mechanical and hydraulic characteristics that make it suitable for use in civil engineering, in contact with the ground. Non-woven fabrics are made of synthetic fibres bonded by a mechanical process called needling. These products are non-toxic and free from chemical binders.

Ecofelt PES-SB is a geotextile manufactured with reclaimed polyester fibres, without chemical treatments, generally used for functions of separation, filtration and drainage, especially when working with low to medium severity of use. It is very popular with construction retailers. Fiber comes in white, light green and multicolor.



An average product has been chosen for the impact assessment, as described in “LCA information” chapter.

Product identification: The family includes items with the following commercial names:

Ecofelt PES-SB 10 - 15 - 20 - 25 - 30 - 35 - 40 - 50 - 60 - 80 - 100 – 120.

UN CPC code: 36950.

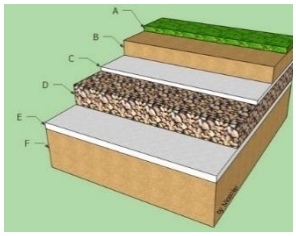
Geographical area: Italy for primary data, global otherwise.

The performances were calculated with reference to the Ecofibre production plant in Prato (PO). The reference market is international.

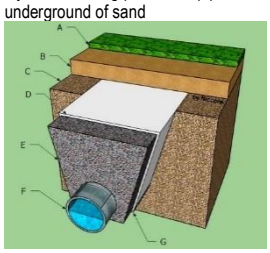
APPLICATION EXAMPLES

Road construction
Railway construction
Ground construction
Construction of drainage systems
Construction of erosion control systems
Dam construction
Canal construction
Tunnelling
Solid waste construction
Liquid waste containment

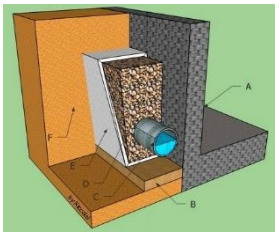
DRAINAGE
A grass layer - B ground layer - C geotextile - D draining gravel layer - E geotextile - F under ground



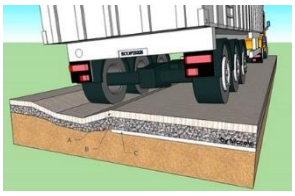
DRAINAGE OF CANALS
A grass layer - B ground layer - C ground - D geotextile - E draining gravel layer - F draining perforated pipe - G underground of sand



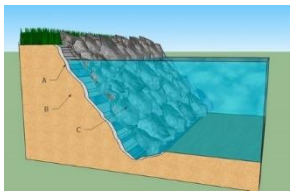
STRAIGHT WALL DRAINAGE
A straight wall - B underground of sand - C draining perforated pipe - D draining gravel layer - E geotextile - F ground



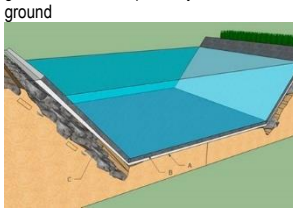
ROAD CONSTRUCTION
A asphalt - B draining gravel layer - C geotextile



EROSION CONTROL
A geotextile - B ground - C stones breakwater



LIQUID WASTE CONTAINMENT
A waterproof protection layer with geotextile - B waterproof layer - C ground



REINFORCED GROUNDS
A geotextile layers - B ground - C drainage materials

LCA information

Declared unit: 1 kg of Ecofelt PES-SB geotextile, plus its packaging.

An average product has been chosen for the impact assessment. Since Ecofelt PES-SB products are homogeneous on a mass basis per declared unit, the average product has the same composition of every item included in the family.
All these items only differ in some physical and mechanical characteristics, such as mass per unit area, thickness, tensile strength and elongation.
All environmental performance indicators have been calculated taking the above-mentioned average product as a reference.

This average product presents an average packaging based on the actual production of the reference year. As this is a mathematical average, this combination does not exist.
The results of all environmental performance indicators were also calculated for two other cases, one called “best”, which has the lowest impact for GWP-GHG category, and one called “worst”, which has the highest impact for GWP-GHG category. The best and worst cases differ from the average product in the packaging composition only.
The maximum difference between these two cases and the average impact are reported in this declaration. The impact range of the whole family is declared with reference to the average product.

Time representativeness: The primary data cover a period of 12 months, reference year 2023.

Database and LCA software used: Ecoinvent 3.10 database; SimaPro software version 9.6.0.1.

Description of system boundaries:

b) Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules). A5 is included for the “balancing-out reporting” only.

The table below shows a detail of the modelling of the various modules.

Modelling of the various modules

Module	Scenario
A1	This phase includes extraction and processing of raw materials, generation of electricity and heat, processing up to the end-of-waste state or disposal of final residues.
A2	This phase includes transportation up to the factory gate and internal transport.
A3	This phase includes manufacturing of the products and their packaging.
A5	This phase is included for the "balancing-out reporting" only, with reference to the packaging. The contribution of this module is enclosed in A1-A3 results.
C1	This phase includes the removal of the products from the installation site, assuming a civil scenario. An excavation hydraulic digger is considered when used.
C2	This phase includes the transportation of the discarded products. Average distance from the demolition site to the waste treatment is assumed to be 100km for landfill disposal.
C3	This phase includes the end-of-life recovery of the product. In this case it is equal to zero.
C4	This phase includes the end-of-life disposal of the product. It is assumed that 100% of the product is disposed in landfill.
D	This module contains the potential impacts and benefits related to the recycling of the products. In this case it is equal to zero.

In case of insufficient input data or data gaps for a unit process, a 1% cut-off criterion has been applied (1 % of primary energy usage and 1 % of the total mass input of that unit process). The total of neglected input flows per module is less than 5 % of energy usage and mass. The method chosen to evaluate the potential environmental impacts of the product subject of this study is the method provided by the standard EN 15804:2012+A2:2019 (CEN, 2019); characterisation factors are based on EF 3.1 method.

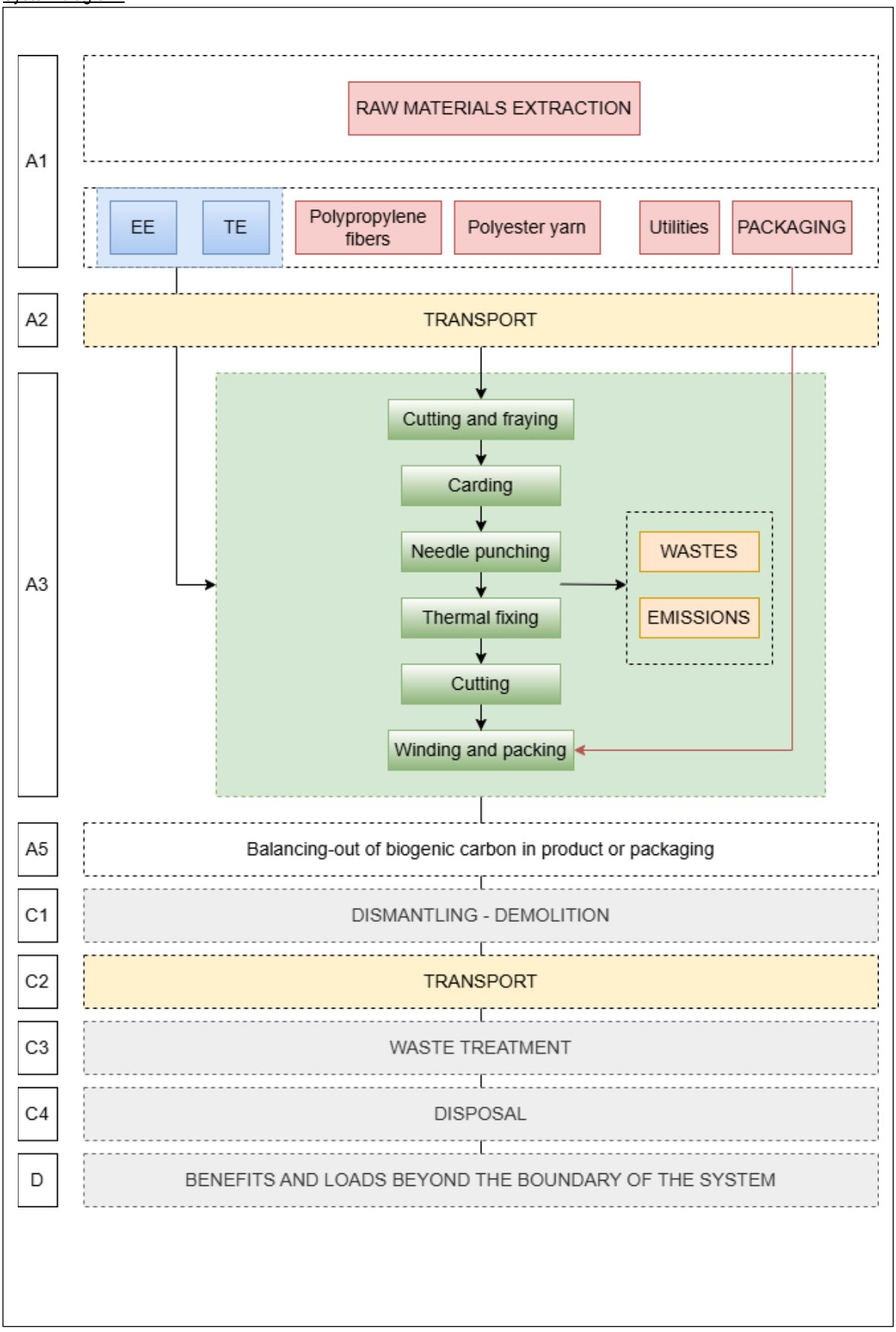
Electricity modelling (Module A1): The modelling of electricity consumption in module A1 was carried out using the residual Italian national mix, using the AIB 2023 report as a data source. The breakdown of the energy sources used is shown below. The emission factor of medium voltage electricity from grid of 0.744 $kgCO_2eq/kWh$ for the GWP-GHG indicator.

Electricity modelling

Source	Residual Mix 2023
Renewables Unspecified	0,00%
Solar	6,21%
Wind	0,43%
Hydro&Marine	0,00%
Geothermal	0,00%
Biomass	0,63%
Nuclear	4,40%
Fossil Unspecified	3,57%
Lignite	0,05%
Hard Coal	22,72%
Gas	58,22%
Oil	3,76%
TOTAL	100,00%

The electricity produced on-site by photovoltaic power plant was modelled as "Electricity, low voltage {IT}| electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, U", characterized by an emission factor of 0.087 $kgCO_2eq/kWh$.

System diagram:



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	ND	X*	ND	ND	ND	ND	ND	ND	ND	X	X	X	X		X
Geography	GLO	GLO	IT	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO		GLO
Specific data used	>60%			-	-	-	-	-	-	-	-	-	-	-	-	-		-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-		-
Variation – sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-		-

*A5 is included for the "balancing-out reporting" only.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Reclaimed polyester	1,00E+00	-	-
TOTAL	1,00E+00	-	-
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Cardboard tubes	5,32E-02	5,32%	2,30E-02
Wood pallet	1,41E-02	1,41%	6,70E-03
LDPE film	4,78E-03	0,48%	-
Straps	7,88E-04	0,08%	-
TOTAL	7,28E-02	7,28%	2,97E-02

The product does not contain any dangerous substances from the candidate list of SVHC for Authorization.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	3,76E+00	1,19E-01	1,94E-02	0,00E+00	1,03E-01	0,00E+00
GWP-biogenic	kg CO_2 eq.	6,09E-03	1,23E-05	3,47E-06	0,00E+00	6,81E-05	0,00E+00
GWP-luluc	kg CO_2 eq.	3,87E-03	1,26E-05	6,33E-06	0,00E+00	6,31E-06	0,00E+00
GWP-total	kg CO_2 eq.	3,77E+00	1,19E-01	1,94E-02	0,00E+00	1,03E-01	0,00E+00
ODP	kg CFC 11 eq.	9,23E-06	2,24E-09	3,85E-10	0,00E+00	2,88E-10	0,00E+00
AP	mol H^+ eq.	1,62E-02	1,02E-03	6,06E-05	0,00E+00	7,92E-05	0,00E+00
EP-freshwater	kg P eq.	9,87E-04	5,15E-06	1,29E-06	0,00E+00	1,18E-06	0,00E+00
EP-marine	kg N eq.	3,42E-03	4,73E-04	2,04E-05	0,00E+00	2,28E-04	0,00E+00
EP-terrestrial	mol N eq.	3,33E-02	5,17E-03	2,22E-04	0,00E+00	3,24E-04	0,00E+00
POCP	kg NMVOC eq.	1,58E-02	1,57E-03	9,49E-05	0,00E+00	1,36E-04	0,00E+00
ADP-minerals&metals*	kg Sb eq.	2,31E-05	5,37E-08	6,19E-08	0,00E+00	2,45E-08	0,00E+00
ADP-fossil*	MJ	1,43E+01	9,49E-02	2,23E-02	0,00E+00	2,21E-02	0,00E+00
WDP*	m^3	9,19E-01	4,03E-03	1,11E-03	0,00E+00	-1,59E-01	0,00E+00
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.*

Additional mandatory and voluntary impact category indicators

Results per declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	3,77E+00	1,19E-01	1,94E-02	0,00E+00	1,03E-01	0,00E+00

The impact categories with a positive variation larger than 10% are GWP-biogenic (99,4%), GWP-luluc (75,6%), EP-marine (10,5%) and WDP (24,6%). The impact categories with a negative variation larger than 10% are GWP-biogenic (-13,5%), GWP-luluc (-10,4%).

[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 CO_2 is set to zero.

Resource use indicators

Results per declared unit							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,32E+00	1,28E-02	3,57E-03	0,00E+00	2,72E-03	0,00E+00
PERM	MJ	1,34E+00	2,84E-03	1,04E-03	0,00E+00	9,49E-04	0,00E+00
PERT	MJ	3,66E+00	1,56E-02	4,61E-03	0,00E+00	3,67E-03	0,00E+00
PENRE	MJ	-4,92E+00	9,49E-02	2,23E-02	0,00E+00	2,21E-02	0,00E+00
PENRM	MJ	1,92E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,43E+01	9,49E-02	2,23E-02	0,00E+00	2,21E-02	0,00E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,36E-02	1,22E-04	3,54E-05	0,00E+00	-3,70E-03	0,00E+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							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	3,55E-03	1,03E-05	1,83E-06	0,00E+00	1,72E-06	0,00E+00
Non-hazardous waste disposed	kg	3,23E-01	1,23E-03	1,29E-02	0,00E+00	1,00E+00	0,00E+00
Radioactive waste disposed	kg	4,46E-05	3,10E-07	8,66E-08	0,00E+00	6,02E-08	0,00E+00

Output flow indicators

Results per declared unit							
Indicator	**Unit**	**A1-A3**	**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
Material for recycling	kg	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
Exported energy, electricity	MJ	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00

References

- General Programme Instructions of the International EPD® System. Version 4.0 (PCR reference) and Version 5.0.
- PCR construction Products and construction services 2019:14 version 1.3.4
- LCA Report "Studio di Life Cycle Assessment di Geotessili Non-Tessuti in fibra di Polipropilene e in fibra di Poliestere" Rev. 0.2 del 20/12/2024

Standard

- ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework + AMD 1:2020 (Amendment 1);
- ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines + AMD 1:2017 (Amendment 1) and AMD 2:2020 (Amendment 2);
- ISO 14025:2010 Environmental labels and declarations — Type III environmental declarations — Principles and procedures;
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction works.

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