ENVIRONMENTAL PRODUCT DECLARATION

MODULO

Program: The International EPD® System
Programma:Operator: EPD International AB

CPC: 36950 Builders' ware of plastics n.e.c

PCR 2019:14: "Construction products" version 1.11

Geographical scope: Globale

Registration n°: S-P-08679
Date of approval: 16-02-2023
Valid until: 15-02-2028
Registration date: 28-03-2023

In compliance with ISO 14025:2006 and EN 15804:2012+A2:2019

"An EPD should provide updated information and could be updated if conditions change. The declared validity is therefore subject to continuous registration and publication on www.environdec.com. "

1 INTRODUCTION

Type III Environmental Declarations contain verifiable and accurate information on the environmental performance of a product, quantified on the basis of a life cycle impact assessment. Their goal is to produce reliable information expressed on a common basis that allows a comparison of environmental performance between products that perform the same function. With this in mind of product sustainability, the Type III Environmental Declarations are developed in compliance with the requirements and prescriptions dictated by the voluntary standard UNI EN ISO 14025: 2010 and to ensure that LCA studies are conducted consistently for all products in the same category, it is required that precise rules and methodologies are respected. These rules are indicated by the PCR - Product Category Rules - that formulate clarifications regarding the performance of a life cycle analysis for a specific product category ensuring the harmony and comparability of the results.

2 COMPANY AND PRODUCT INFORMATION

2.1 THE COMPANY[1]

Geoplast S.p.a. is an Italian multinational company specialized in the regeneration of polyethylene (high and low density) and polypropylene offering a wide range of solutions for formwork, foundations, drainage and sports flooring. Geoplast S.p.A. is structured in 7 business divisions to which specific skills, resources and investments in Research & Development are dedicated. The company has three factories on a total area of 40,000 m² of which 10,000 m² are covered. The production department has 25 production lines: 2 regeneration lines and 25 large tonnage injection moulding machines, ranging from 700 t up to 3500 t closing force, with injection capacity up to 61 kg. The production capacity of over 25,000 tons of transformed plastic material, with more than 20 million items produced per year, places Geoplast S.p.A. among the most important industrial companies in the sector.

2.2 THE PRODUCTS.

MODULO is the disposable formwork for the construction of ventilated crawl spaces and sanitary voids, which constitute a physical barrier between the ground and the building. Properly ventilated, the crawl space allows the elimination of rising damp and the conveyance of RADON gas, if present, into the atmosphere. MODULO allows you to obtain a reinforced concrete structure consisting of a slab and a series of pillars placed at a constant distance between centres, capable of distributing stresses over the entire surface in a uniform manner, thus offering excellent static and dynamic load capacity. MODULO is made with regenerated plastic materials, environmentally friendly, with high mechanical resistance, unalterable over time. The products covered by the declaration are made of 100% recycled high or medium density polypropylene. Solid and robust, it has a very high resistance to breaking loads and abrasions. Regenerated polypropylene is a chemically inert material, neutral towards the environment and non-polluting in contact with the ground and water.

It is specified that the activity takes place in the factory of:

- Via Martiri della Libertà, 6/8 35010 Grantorto (Padova - PD) ITALY
- Via Martiri della Libertà 7, 35010 Grantorto Grantorto (PD) Italy

[1] EPD Owner: Geoplast spa
Registered Office: Via Martiri della Libertà, 6/8 - 35010 Grantorto (Padova) ITALY
Phone: +39 049 9490289

Regarding the products considered, at the aforementioned establishment it does not rely on subcontractors.

The products inside the current study are the following:

codice	articolo
EMODULO5003	MODULO H3
EMODULO5006	MODULO H6
EMODULO5809	MODULO H9
EMODULO5013	MODULO H13
EMODULO5015	MODULO H15
EMODULO5017	MODULO H17
EMODULO5020	MODULO H20
EMODULO5025	MODULO H25
EMODULO5027	MODULO H27

codice	articolo
EMODULO5030	MODULO H30
EMODULO5035	MODULO H35
EMODULO5040	MODULO H40
EMODULO7145	MODULO H45
EMODULO7150	MODULO H50
EMODULO7155	MODULO H55
EMODULO7160	MODULO H60
EMODULO7165	MODULO H65
EMODULO7170	MODULO H70

MODULO		kg/kg
PRODUCT	Recycled PP	1,00E+00
MODULO		Kg/kg
PACKAGING	Pallet	9,10E-03
	Extensible	1,40E-03
	Polystyrene	3,04E-04

Packaging:

Recycled material:

Geoplast S.p.a. products are shipped on pallets, wrapped in a low-density polyethylene film and, for some items, in order to keep the form of the form unchanged during transport, polystyrene squares are inserted at the base.

Geoplast S.p.a. deals with the processing of already regenerated polypropylene granules that it buys from companies that deal with the recycling and sale of the material. Before being discharged, polypropylene is subjected to quality tests through laboratory analyzes and molding tests. If the material complies with the requirements of the tests, it is sent for processing; otherwise, the yield of the granules is provided.

3 LCA INFORMATION

3.1 THE DECLARED UNIT

The declared unit is equal to 1 kg of recycled polypropylene formwork.

3.2 REFERENCE SERVICE LIFE

Not applicable.

3.3 TIME LIMITS

The time limits include the period from January 2021 to December 2021, a time frame considered to be representative of the company's activities. These were chosen given the most complete availability of information relating to the analysis.

3.4 SYSTEM LIMITS

In accordance with the reference standard UNI EN 15804 and the PCR followed, the environmental impact assessment of the life cycle of the products is of the type "from cradle to gate with modules C1-C4 and module D" (Figure 1). Forms A4-A5 and B1-B7 were excluded.

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Decostrunction, demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	IT	-	-	-	-	-	-	-	-	-	-	IT	IT	IT	IT
Specific data used	37% del valore GWP-GHG			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation –product	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – site	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Figure 1: ND= Module not declared

Table 1

MODULO	INDICATOR	
A1 – Raw material supply	Raw Material	***UPSTREAM***
	Electricity consumption	
A2 – Transport	Transport raw material and packaging	
A3 - Manufacturing	Material (packaging)	***CORE***
	Transport of generated waste	
	Treatment of generated waste	
C1 - De-construction demolition	Consumption related to demolitions	***END OF LIFE***
C2 - Transport	Transport of waste	
C3 - Waste processing	Treatment of waste	

C4 - Disposal	Disposal	

Within the study, the flows relating to the make-up water from the network for washing and the emissions of dust from the chimneys were not accounted for. Furthermore, the phases of use (B1-B7) were not included in the study, since the paint products are applied manually and directly on the product and do not require maintenance or repairs, they do not involve energy or water consumption. The scenarios adopted for the modelling of modules C1, C2, C3, C4 and D were considered and assumed as follows:

- The impacts associated with demolition (C1) are assumed as negligible. Any removal operations of the artifact do not require the use of electricity or other inputs. Removal, if necessary, can usually be done manually.
- A distance of 51.3 km is assumed for phase C2.
- The product after the demolition activities is fully recovered (C3,C4);
- For module D, any environmental benefits beyond the product recovery system have been defined (D)

3.5 SYSTEM DIAGRAM AND PRODUCTION PROCESSES

The characteristic environmental performance indicators were investigated for each information module. In choosing the data to be used for the study, an attempt was made to privilege primary data that can be cataloged by the company. These data constitute the primary source of information for inventory analysis. The latter can be grouped according to environmental performance indicators, to which the results of environmental performance will subsequently be reported. On the basis of these indicators, the software model was developed and the inventory analysis was then developed according to macro-consumption referring to the declared unit that characterizes the study. The block diagram relating to production is presented below (Figure 2).

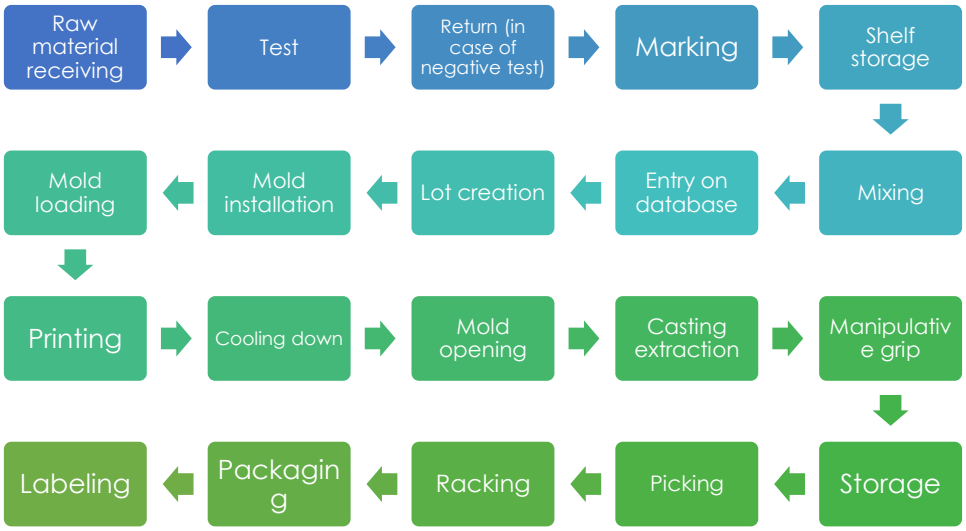

Figure 2

3.6 DATABASE AND SOFTWARE

The SimaPro calculation software (SimaPro 9) was used to process the inventory and to calculate the eco-profiles and the following databases were selected: "ECOINVENT".

4 ENVIRONMENTAL PERFORMANCES

4.1 POTENZIAL ENVIRONMENTAL IMPACTS

Below are the results of the eco-profile obtained from the life cycle analysis of the products subject to the environmental declaration, along the impact categories in accordance with UNI EN 15804.

Table 2: Breakdown of the results of the impact assessment by environmental performance indicators with reference to the declared unit along the information forms investigated

Average Kg Modulo								
IMPACT CATEGORY	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
Climate change	kg CO2 eq	1,05E+00	0,00E+00	8,87E-03	2,05E-01	0,00E+00	1,26E+00	-5,75E-01
Climate change - Fossil	kg CO2 eq	9,48E-01	0,00E+00	8,84E-03	2,05E-01	0,00E+00	1,16E+00	-4,83E-01
Climate change - Biogenic	kg CO2 eq	9,84E-02	0,00E+00	2,36E-05	1,69E-04	0,00E+00	9,86E-02	-9,18E-02
Climate change - Land use and LU change	kg CO2 eq	3,44E-04	0,00E+00	3,50E-06	1,36E-04	0,00E+00	4,83E-04	-2,57E-04
Ozone depletion	kg CFC11 eq	1,18E-07	0,00E+00	2,06E-09	2,45E-08	0,00E+00	1,44E-07	-5,71E-08
Acidification	mol H+ eq	4,08E-03	0,00E+00	4,48E-05	8,59E-04	0,00E+00	4,98E-03	-2,04E-03
Eutrophication, freshwater**	kg P eq	1,31E-04	0,00E+00	5,75E-07	3,53E-05	0,00E+00	1,67E-04	-1,22E-05
Eutrophication, marine	kg N eq	8,65E-04	0,00E+00	1,54E-05	2,54E-04	0,00E+00	1,13E-03	-4,88E-04
Eutrophication, terrestrial	mol N eq	8,89E-03	0,00E+00	1,69E-04	2,66E-03	0,00E+00	1,17E-02	-4,95E-03
Photochemical ozone formation	kg NMVOC eq	2,30E-03	0,00E+00	4,11E-05	6,92E-04	0,00E+00	3,03E-03	-1,29E-03
Resource use, minerals and metals*	kg Sb eq	3,27E-06	0,00E+00	3,10E-08	8,45E-07	0,00E+00	4,14E-06	-2,28E-06
Resource use, fossils*	MJ	1,25E+01	0,00E+00	1,32E-01	3,14E+00	0,00E+00	1,58E+01	-6,31E+00
Water use*	m3 depriv.	2,33E-01	0,00E+00	4,04E-04	5,69E-02	0,00E+00	2,91E-01	-1,16E-01
Particulate matter	disease inc.	3,23E-08	0,00E+00	6,37E-10	1,26E-08	0,00E+00	4,56E-08	-2,02E-08
Ionising radiation	kBq U-235 eq	8,55E-02	0,00E+00	6,93E-04	1,83E-02	0,00E+00	1,04E-01	-4,05E-02
Ecotoxicity, freshwater	CTUe	1,53E+01	0,00E+00	1,05E-01	2,24E+00	0,00E+00	1,77E+01	-1,11E+01
Human toxicity, non-cancer	CTUh	7,75E-09	0,00E+00	1,10E-10	2,12E-09	0,00E+00	9,98E-09	-5,08E-09
Human toxicity, cancer	CTUh	5,63E-10	0,00E+00	3,41E-12	2,06E-10	0,00E+00	7,72E-10	-4,77E-10
Land use	Pt	5,02E+00	0,00E+00	9,60E-02	1,92E+00	0,00E+00	7,03E+00	-3,63E+00

* Disclaimer: The results of this environmental impact indicator must be used with caution because the uncertainties of these results are high or because experience with the indicator is limited. ** the results in kg PO4 eq. it is obtained by multiplying the results in kg P eq. with a factor of 3.07

Table 3: Breakdown of the results of the use of resources with reference to the declared unit along the information forms investigated. Note: Biogenic and stored energy carbon in packing material are balanced in A5.

Average Kg Modulo											
PARAMETRI	**UNITÀ DI MISURA**	**A1**	**A2**	**A3**	**A5**	**C1**	**C2**	**C3**	**C4**	**TOTALE**	**D**
PERE	MJ	2,65E-01	7,77E-03	3,15E-03	2,37E-03	0,00E+00	1,90E-03	1,45E-01	1,35E-01	5,61E-01	-2,65E-01
PERM	MJ	1,35E-01	0,00E+00	2,37E-03	-2,37E-03	0,00E+00	0,00E+00	0,00E+00	-1,35E-01	0,00E+00	-1,35E-01
PERT	MJ	4,00E-01	7,77E-03	5,52E-03	0,00E+00	0,00E+00	1,90E-03	1,45E-01	0,00E+00	5,61E-01	-4,00E-01
PENRE	MJ	6,31E+00	5,51E-01	1,63E-01	1,10E-02	0,00E+00	1,35E-01	3,38E+00	8,85E-01	1,14E+01	-6,31E+00
PENRM	MJ	8,85E-01	0,00E+00	1,10E-02	-1,10E-02	0,00E+00	0,00E+00	0,00E+00	-8,85E-01	0,00E+00	-8,85E-01
PENRT	MJ	7,20E+00	5,51E-01	1,74E-01	0,00E+00	0,00E+00	1,35E-01	3,38E+00	0,00E+00	1,14E+01	-7,20E+00
SM	Kg	1,00E+00	0,00E+00	2,90E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,00E+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	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	3,50E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,50E-07	0,00E+00
FW	m3	5,00E-03	5,75E-05	4,48E-03	0,00E+00	0,00E+00	1,41E-05	1,49E-03	0,00E+00	1,10E-02	-3,09E-03

PERE = Use of renewable primary energy excluding primary renewable energy resources used as raw materials; PERM = Use of renewable energy resources as raw materials PERT= Total use of primary renewable energy resources; PENRE = Use of non-renewable primary energy resources excluding primary non-renewable energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of fresh water

Table 4: Distribution of waste with reference to the unit declared along the information forms investigated

Average Kg Modulo								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
HWD	kg	2,99E-05	0,00E+00	3,52E-07	4,37E-06	0,00E+00	3,46E-05	-1,04E-05
NHWD	kg	2,55E-01	0,00E+00	6,94E-03	1,43E-01	0,00E+00	4,05E-01	-2,13E-01
RWD	kg	4,45E-05	0,00E+00	9,12E-07	1,30E-05	0,00E+00	5,84E-05	-2,78E-05

HWD = Hazardous waste disposed of; NHWD = Non hazardous waste disposed of; RWD = Radioactive waste disposed of;

Table 5: Breakdown of output flows with reference to the unit declared along the information forms investigated

Average Kg Modulo								
PARAMETERS	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTAL**	**D**
CRU	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	Kg	0,00E+00	0,00E+00	1,00E+00	0,00E+00	1,00E+00	1,00E+00	0,00E+00
MER	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
CRU	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

CRU = Components for reuse; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Electricity exported; EET = Thermal energy exported

Table 6: The indicator includes all greenhouse gases included in the total GWP, but excludes the uptake and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. This indicator is therefore equal to the GWP indicator originally defined in EN 15804: 2012 + A1: 2013

Average Kg Modulo		INFORMATION MODULES						
Potential environmental impacts – additional indicator	**UNIT**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**TOTALE**	**D**
GWP - GHG	Kg CO2 eq	1,14E+00	0,00E+00	2,59E-04	2,06E-01	0,00E+00	1,35E+00	-5,19E-01

Table 7: Biogenic carbon content in the product and its packaging

	C BIOGENIC	
	Product	**Packaging: Pallet**
Average Kg Modulo	Non significativo	1,67E-02

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg CO2

OTHER ENVIRONMENTAL INFORMATION

Geoplast S.p.a. products object of this declaration are made from 100% recycled / regenerated high or medium density polypropylene. Regenerated polypropylene is a chemically inert material, neutral towards the environment and non-polluting in contact with the ground and water. Therefore Geoplast S.p.a. declares that all products belonging to the Modulo families are manufactured with recycled material from a supplier who is configured as a recoverer / producer of substances pursuant to Regulation (EC) 1907/2006 (REACH Regulation) and that, pursuant to article 2 paragraph 7 letter. d) of REACH, it benefits from the exemption from registration thanks to its internal organization that allows it to guarantee the identity of the recovered substance. It is also specified that :

- the substances resulting from the recovery process are the same substances registered under Title II;
- the information required by Articles 31 or 32 on substances registered pursuant to
- Title II are available at the Geoplast plan, Via Martiri della Libertà, 6/8 35010 GRANTORTO (PD).

Therefore, with the following Self-declaration, Geoplast S.p.a. declares that substances belonging to the "Candidate List of Substances of Very High Concern" therefore do not exceed 0.1% within the finished product compared to its total weight.

5 REFERENCES

PCR 2019:14: “Construction products” version 1.11

UNI EN 15804 – Sustainability of buildings - Environmental product declarations - Development framework rules by product category.

UNI EN ISO 14025:2010 – Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

UNI EN ISO 14040:2021– Environmental management - Life cycle assessment - Principles and framework.

UNI EN ISO 14044:2021 – Environmental management - Life cycle assessment - Requirements and guidelines.

GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM VERSION 3.01 (2019-09-18)

Report FPC ID 01/2022 – AGG 01 del 06/10/2022

PROGRAM INFORMATION

Program:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm Sweden www.environdec.com info@environdec.com

The ISO 21930 standard and the CEN EN 15804 standard serve as the main rules for the product category (PCR)
Product category rules (PCR): PCR 2019:14: "Construction products" version 1.11
PCR review was conducted by: The Technical Committee of the International EPD® System. Guardare www.environdec.com/TC per l'elenco dei membri. Review chair: Claudia A. Peña, University of Concepción, Chile. Il comitato di revisione può essere contattato tramite www.environdec.com/contact.
EPD REGISTRATION NUMBER: S-P-08679
PCR review was conducted by: The Technical Committee of the International EPD® System. Full list of TC members available at:www.environdec.com/TC
Independent third party verification of the declaration and data, according to ISO 14025 ☒ External ☐ Internal ☒ EPD process certification ☐ EPD verification
Third party verifier: *< DNV >*
Procedure for follow-up of data during EPD validity involves third party verifier: ☒ Yes ☐ No

The owner of the EPD has sole ownership and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

EPD Owner	**Geopalst spa**	Geoplast Building beyond together	https://www.geoplastglobal.com/it/
Technical Support	**EcamRicert Srl**	Ecam Ricert Mérieux NutriSciences	**https://ecamricert.com/**