ENVIRONMENTAL PRODUCT DECLARATION

Modular rollable flooring, Compomil

Composystem Di Augusto Ballerini
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Reference PCR	***2012:01 Construction Products and construction services – version 2.33, valid until 2021-12-31.***
Registration date	*13/05/2021*
Certification N°	*S-P-03548*
Valid until	*07/04/2025*
Revision date	*26/04/2022*
Geographical scope	*World-wide*
Program	The International EPD® System, www.environdec.com
Operator	EPD International AB

This EPD cannot be compared with other products not subject to the regulatory framework of UNI EN 15804:2012.
This environmental declaration has been prepared in accordance with ISO 14025.

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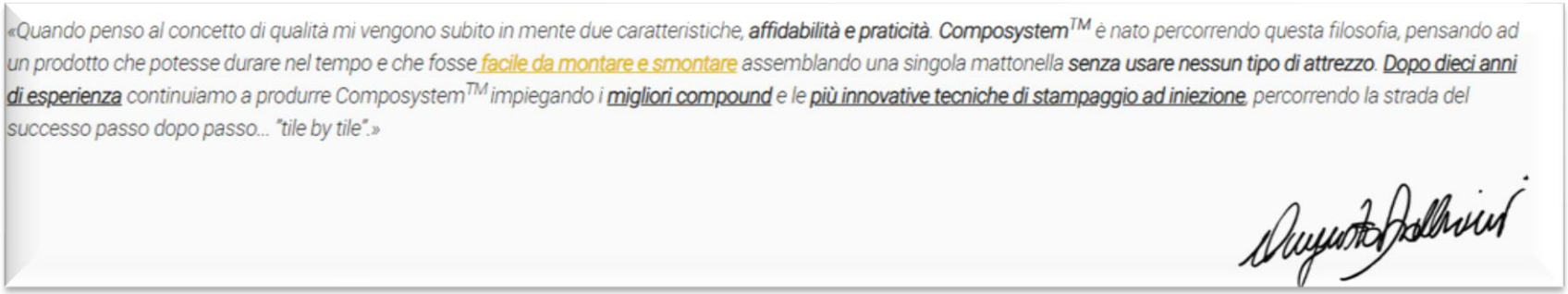
1.Company description

Composystem was established in Bologna to design and produce innovative quality solutions for thermoplastic products and materials.
The company's know-how, research and constant commitment to the industry have allowed it to specialise and become a landmark for the production of modular rollable flooring for industrial, civil and military applications.
Composystem offers a vast range of products guaranteeing *ad hoc* solutions specifically meeting the requirements of operators in the sectors in which they are used.

Use of the best industrial technologies available and in-depth knowledge of production processes allow the company to offer its customers functional, long-lasting, ecologically sound products made out of recyclable materials containing no hazardous substances.

With the goal of improving environmental management of its production processes and differentiating among its products, the company has decided to quantify the environmental impact of its Compomil rollable flooring using the LCA (Life Cycle Assessment) method in accordance with the regulations governing the EPD Standard.



2.The product

Compomil is a modular rollable thermoplastic flooring material used in professional event venue installations. It is used primarily to set up and furnish venues for social events, field tents in military bases, and first-aid facilities during emergency response to earthquakes and other natural disasters.

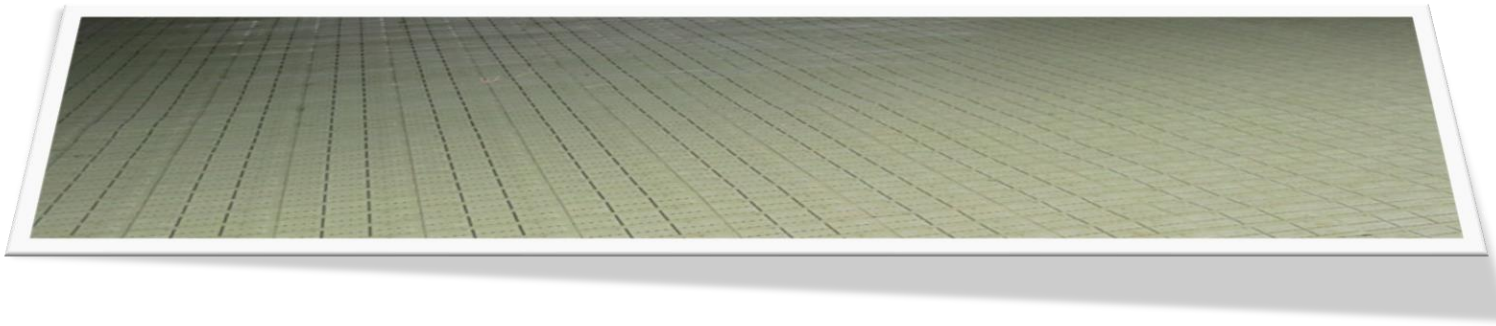
Compomil is made up of a series of tiles which are assembled together to create a uniform temporary floor. Compomil tiles must all be assembled only at the time of first use, because the flooring can be divided into strips and rolled up like a carpet in order to dismantle it, producing rolls of flooring ready for re-use.

Intended uses

Compomil may be used to create floors and walkways over:

- asphalt, concrete, brick, lawns, and compact, levelled soil which does not contain large stones (maximum pebble diameter the size of a hazelnut).
- all types of sand, provided they are compact, with a sheet of non-woven fabric (NWF) under it if necessary.
- as a base for loads (refer to compression test under load, available on request

MATERIALS	%	SUBSTANCES	CAS NUMBER	HAZARDOUSNESS
Plastic polymer	93%	1-propene, polymer with ethene	9010-79-1	Non-hazardous substance under (EC) Regulation No. 1272/2008.
Flame retardant	5%	Polypropylene homopolymer Melamine compounds 2.3 dimethyl–2.3 diphenylbutane	9003-07-01 29305-12-2 25822-43-9	Non-hazardous substances under (EC) Regulation No. 1272/2008.
Master colourant	1%	Phosphites Phenols Polyethylene	31570-709-6 57676-62-6	Non-hazardous substances under (EC) Regulation No. 1272/2008.
Melamine compounds	0.5%	Melamine compounds	29305-12-2	Non-hazardous substances under (EC) Regulation No. 1272/2008.
Mineral content	0.5%	Mineral content		Non-hazardous substances under (EC) Regulation No. 1272/2008.



3.Description of production process

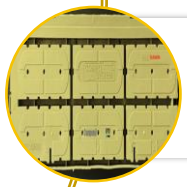
The production process for Compomil flooring involves extraction and processing of crude oil for production of polymer pellet; production of a compound representing the basic material from which the product is made through the injection moulding process. The finished product (tile) is packaged in cardboard and stored prior to distribution to the final customer.

Extraction of raw materials - Production of plastic materials of fossil origin begins with the process of crude oil extraction and distillation. The industrial process that permits petroleum products to be obtained from crude oil is referred to as cracking, which breaks up long chains of the hydrocarbon molecules from products are obtained such as the virgin naphtha fraction essential for the production of monomers (ethylene and propylene). Polypropylene is a member of the family of polyolefins and thermoplastics, that is, polymers that can change their shape as they are softened with heat and become rigid again when cooled.

Procurement of technological adjuvants (master colourant and flame retardant).

Compound production - During compound production, a blend is prepared which consists essentially of 3 elements:

- colourant master, which gives the product the colour required by client;
- flame retardant;
- polypropylene copolymer.



Injection moulding - During printing, compound in granular form is molten and injected into a sealed mould under high pressure. The mould is then cooled.

Packaging, storage and distribution - Tiles are packaged in a cardboard box. Each box contains: 120 Compomil tiles and a polycarbonate manual disconnecting device. The boxes are then positioned on a pallet, stacked in 6 layers consisting of 3 boxes each, and stored. The packaged product is then ready for distribution.

4. Method and functional unit

The method used for the calculation is the LCA - Life Cycle Assessment that, regulated by the International Standard ISO 14040 series, allows to determine the environmental impacts of a product or service in terms of resource consumption and emissions into the environment throughout the life cycle. For the research the following has been considered:

- the requirements of the international EPD system, expressed in the "General Programme Instructions document for the International EPD ®" - 11/05/2015, vs 2.5; to obtain an environmental statement that is both compliant and certifiable according to said rules.
- The requirements of the Product Category Rules (PCR) "2012:01 Construction Products and construction services – version 2.33, valid until 2021-12-31.
- The requirements of Standard UNI EN 15804:2012 - Sustainability of constructions - Product environmental declarations - Framework development rules by product category.

The LCA method permits assessment of the impact of all stages in the product's life cycle, providing an exhaustive overview of the product's environmental performance throughout its life cycle ("Cradle to Tomb"). The analysis was conducted in four phases:

1. Definition of the goal and field of application.
2. Analysis of inventory.
3. Assessment of impact.
4. Interpretation of the results.

The software used to process the data is SimaPro 9.1.1.1; the database used is Ecoinvent 3.6.

The goal of this functional unit is to supply a reference for all the items of information in input and output to and from the system, and it is defined in accordance with the goal of the study and the reference PCR.

The functional unit in this study is 1 sqm of Compomil modular rollable flooring with a useful lifespan of 15 years.

The results are presented for 1 sqm, as required by the PCR, and for a single 130 g tile, for a 1-year useful lifespan. The impacts associated with the gray product differ in percentages of less than 5%. For this reason, only the impacts relating to the green Compomil product are reported in the declaration.

5. Principal hypotheses adopted and data quality

On the basis of the definition contained in GPI 2.5, data may be specific data, selected generic data or proxy data. A quality analysis was implemented on the basis of the time, geographical and technological representativeness for the year 2020, considered good.
The "proxy" data used does not exceed the 10% portion of each impact category.

Control of the entire production process and a relationship of trust with suppliers permitted collection of specific data on each phase (upstream, core and downstream). The product is not yet available on the market. The figures refer to production on an industrial scale.

The principal hypotheses adopted and considerations on data quality are listed point by point.

- **Compound production** – The chemical composition of the compound is reported in the supplier's technical data sheets and safety data sheets. The composition of components of the compound is also specified on the safety data sheets supplied by individual suppliers. Energy consumption is estimated on the basis of the power absorbed by the machine and the quantity of compound prepared in one hour of operation.
- **Tile moulding** – Information on moulding is collected directly in the production plant. Energy consumption is estimated on the basis of the power absorbed by the press and the number of tiles moulded in one hour of operation. The wastes generated at this stage are represented by the packaging in which the compound arrives at the plant.
- **Packaging** – Information on packaging was obtained by weighing the primary packaging in the field and referring to the product's instruction manual.
- **Distribution** – The market on which Compomil will be sold is considered to be identical to the market for a product with similar features that is already available. The Italian, European and non-European markets are therefore taken into consideration, even though distribution on the Italian market currently accounts for the majority of sales (%). Distribution outside the EU is considered to take place by sea.
- **Replacement** – A hypothetical figure of 1% of the flooring is considered to be replaced.
- **End of life** – End of life is calculated for primary packaging, for the product, and for the instruments required to remove it on-site. The end of life scenario refers to the average Italian situation for handling of packaging materials, as reported in the most recent available ISPRA report ("Rapporto rifiuti urbani", or "Report on urban wastes", ISPRA, 2020). End of life data is considered generic data.

6.Boundaries of the system analysed

In accordance with the **reference PCR**, the product's "Cradle to grave" life cycle has been divided into three stages:

- **Upstream processes** (cradle to gate)
- **Core processes** (gate to gate)
- **Downstream processes** (gate to grave)

The table below lists the aspects taken into consideration for each of these stages.

UPSTREAM			CORE		DOWNSTREAM											Recovery of resources
Raw material and product production			Product construction		Flooring use							Flooring end of life				
Raw materials	Transportations	Production	Transportations	Installation	Use	Maintenance	Repair	Replacement	Renovations	Operations consuming energy	Operations consuming water	Removal	Transportation	Waste management	Landfill	Reuse – Recovery - Potential Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	X	MND	X	MND	MND	MND	X	X	X	X	MND

A list of exclusions is provided below, with reasons for each.

UPSTREAM – No exclusions.
CORE - According to PCR:

- Production of machinery, buildings and other capital goods not directly connected with the production process
- Employees' business travel
- Employees' commuting

DOWNSTREAM – Excludes operations involved in use, repair, renovation, use of energy and use of water, which are not applicable to the product under study. Installation has been excluded as it takes place manually and does not require use of tools.

7.Environmental performance

This paragraph lists the environmental performance associated with the product under study: 1 sqm Compomil modular roll flooring. Consumption of resources is reported as stated in the reference PCR.

The table does not report consumption of secondary resources because they are not used in the product's life cycle.

		PRODUCT STAGE			CONSTRUCTION PROCESS STAGE	USE STAGE						Total
Impact category	**Units**	**Production of raw material**	**Transportations**	**Moulding of finished product**	**Distribution**	**Replacement**	**Cleaning and maintenance**	**Dismantling**	**Transportation**	**Waste management**	**Landfill**	
Renewable energy resources not used as raw materials	*MJ*	*3,04E-01*	*4,83E-03*	*3,03E-01*	*4,23E-03*	*3,03E-03*	*1,16E-01*	*2,68E-03*	*4,97E-04*	*8,04E-04*	*2,51E-04*	*7,39E-01*
Renewable energy resources used as raw materials	*MJ*	*1,07E-01*	*1,87E-03*	*2,93E-01*	*1,41E-03*	*2,93E-03*	*1,27E-02*	*1,45E-03*	*1,92E-04*	*2,24E-04*	*6,07E-05*	*4,21E-01*
Total renewable energy resources	*MJ*	***4,12E-01***	***6,70E-03***	***5,95E-01***	***5,64E-03***	***5,97E-03***	***1,29E-01***	***4,13E-03***	***6,89E-04***	***1,03E-03***	***3,12E-04***	***1,16E+00***
Non-renewable energy resource not used as raw materials	*MJ*	*1,82E+01*	*3,35E-01*	*1,14E+00*	*3,43E-01*	*1,49E-02*	*1,81E-01*	*7,77E-02*	*3,44E-02*	*1,35E-02*	*6,27E-03*	*2,03E+01*
Non-renewable energy sources used as raw materials	*MJ*	*3,71E-02*	*0,00E+00*	*3,00E-01*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*3,37E-01*
Total non-renewable energy resources	*MJ*	***1,82E+01***	***3,35E-01***	***1,44E+00***	***3,43E-01***	***1,49E-02***	***1,81E-01***	***7,77E-02***	***3,44E-02***	***1,35E-02***	***6,27E-03***	***2,07E+01***
Secondary materials	*kg*	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***	***0,00E+00***
Renewable secondary fuels	*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***	***0,00E+00***
Non-renewable secondary fuels	*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***	***0,00E+00***
Consumption of fresh water	*m3*	***1,30E-03***	***5,84E-05***	***7,84E-04***	***6,93E-05***	***7,93E-06***	***1,65E-03***	***1,33E-05***	***6,01E-06***	***1,30E-04***	***7,62E-06***	***4,02E-03***

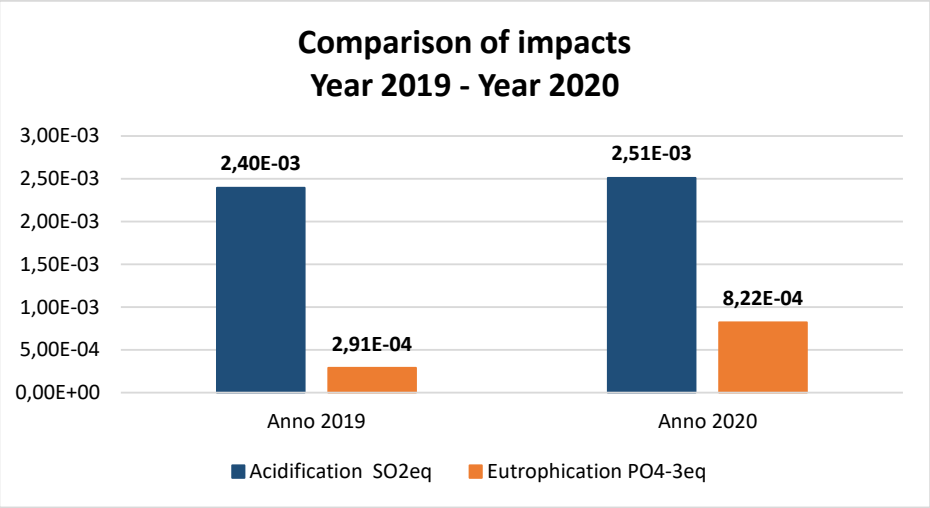
		PRODUCT STAGE			CONSTRUCTION PROCESS STAGE	USE STAGE						
Impact category	Units	Production of raw material	Transportations	Moulding of finished product	Distribution	Replacement	Cleaning and maintenance	Dismantling	Transportation	Waste management	Landfill	Total
Hazardous waste	*kg*	*0,00E+00*	*0,00E+00*	*0,010200*	*0,00E+00*	*6,80E-06*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*1,18E-01*	*0,00E+00*	*1,28E-01*
Non hazardous waste	*kg*	*0,00E+00*	*0,00E+00*	*0,002950*	*0,00E+00*	*1,97E-06*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*2,97E-02*	*0,00E+00*	*3,26E-02*
Radioactive waste	*kg*	*0,00E+00*	*0,00E+00*	*0,010500*	*0,00E+00*	*7,00E-06*	*0,00E+00*	*0,00E+00*	*0,00E+00*	*1,35E-01*	*0,00E+00*	*1,45E-01*

The table shows the environmental impact of production of 1 sqm of Compomil flooring.

		PRODUCT STAGE			CONSTRUCTION PROCESS STAGE	USE STAGE							
Impact category	Units	Production of raw material	Transportations	Moulding of finished product	Distribution	Replacement	Cleaning and maintenance	Dismantling	Transportation	Waste management	Landfill	Total	Recovery of resources
Acidification	*Kg SO_2eq*	1,69E-03	1,02E-04	4,07E-04	1,57E-04	4,24E-06	8,43E-05	2,08E-05	1,05E-05	3,53E-05	3,31E-06	**2,51E-03**	-
Eutrophication	*Kg PO_4^{-3}eq*	4,05E-04	2,02E-05	1,39E-04	2,50E-05	1,43E-06	5,09E-05	3,46E-06	2,08E-06	5,26E-05	1,22E-04	**8,22E-04**	-
Global warming (GWP100a)	*Kg CO_2eq*	5,29E-01	2,23E-02	1,11E-01	2,25E-02	1,14E-03	2,15E-02	6,56E-03	2,29E-03	2,96E-01	2,78E-03	**1,01E+00**	-
Ozone layer depletion	*Kg CFC 11eq*	1,48E-08	4,11E-09	1,29E-08	4,22E-09	1,36E-10	2,00E-09	1,08E-10	4,23E-10	2,32E-10	7,27E-11	**3,91E-08**	-
Abiotic depletion, elements	*kg Sbeq*	4,75E-06	6,14E-07	3,42E-07	3,67E-07	4,41E-09	3,37E-07	7,10E-09	6,31E-08	1,11E-08	2,14E-09	**6,49E-06**	-
Abiotic depletion , fossil fuels	*MJ*	1,82E+01	3,35E-01	1,43E+00	3,43E-01	1,49E-02	1,81E-01	7,76E-02	3,44E-02	1,35E-02	6,27E-03	**2,06E+01**	-
Photochemical oxidation	*Kg C_2H_4eq*	1,12E-04	3,02E-06	1,88E-05	4,28E-06	1,93E-07	7,90E-06	1,21E-06	3,11E-07	1,11E-06	5,01E-07	**1,49E-04**	-

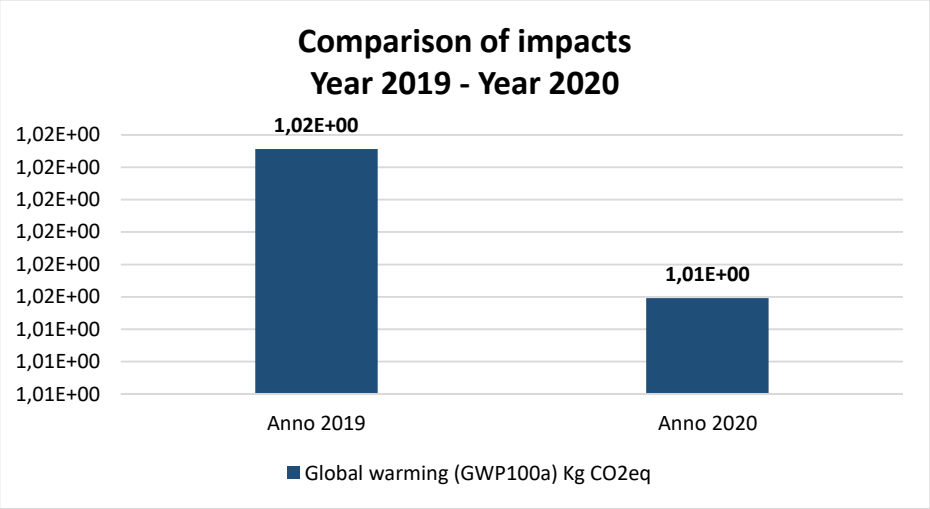
8.Environmental performance comparison previous year

The following graphs compare the impacts calculated with the 2019 data and the data obtained during the study update. The differences are greater than 10% for the categories "Eutrophication", "Photochemical oxidation", "Abiotic deplation, elements" and "Ozone deplation layer". The "Global Warming" and "Acidification" categories show an impact variation of less than 3%.



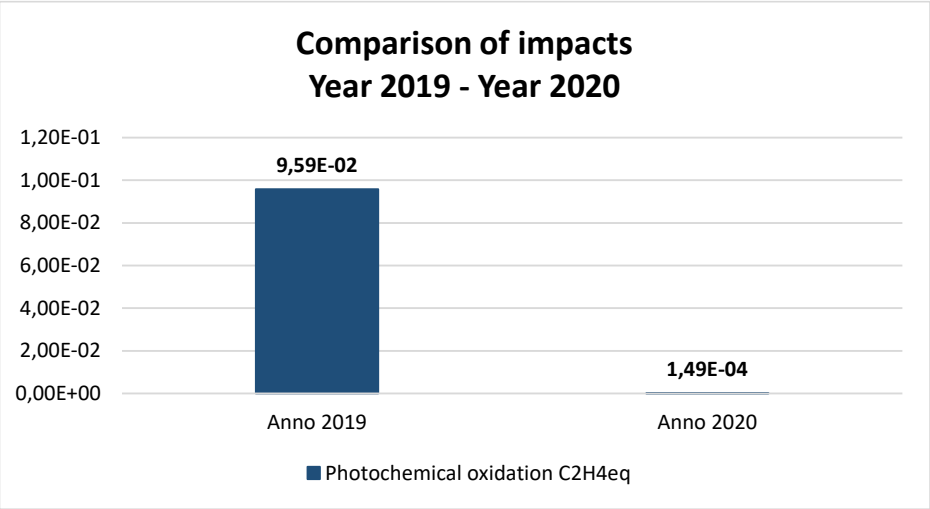
Acidification has not changed significantly since last year. The impact is almost unchanged.

The only change concerns the distribution phase and the modelling of energy consumption (residual mix), therefore this minimal variation is attributable to these two factors.
Eutrophication has a greater impact than last year. As with acidification, this is due to the distribution and modelling of energy consumption.



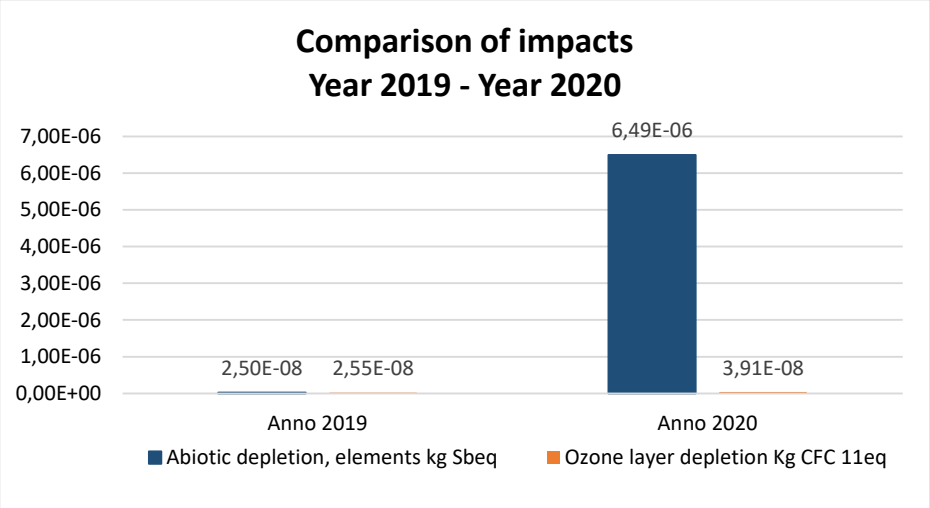
Global warming shows a lower impact than last year, equal to 0.45%, attributable to a reduction in the impact associated with the compound production phase.

No changes were made to the input data at this stage, but only to the modeling following the update of the calculation software. For this reason, it is deemed that the change in impact is attributable to this aspect.



Photochemical oxidation shows a significantly lower impact than last year, attributable to a reduction in the impact associated with the tile molding phase.

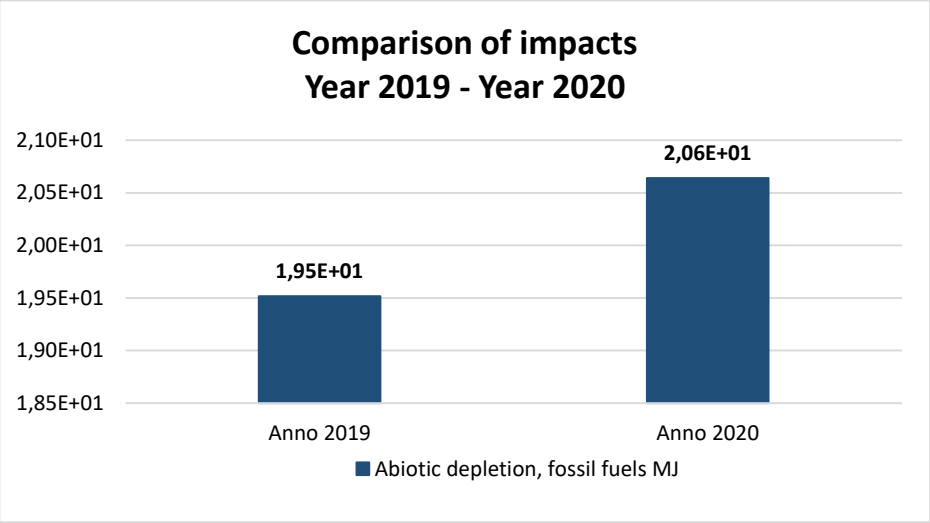
No changes were made to the input data at this stage, but only to the modeling following the update of the calculation software. For this reason, it is deemed that the change in impact is attributable to this aspect.



The category of “abiotic depletion, elements” registers a greater impact than last year.

The ozone depletion layer also has a higher impact than last year, equal to 52.91%.

The only change made concerns the phase of distribution and modeling of energy consumption (residual mix), therefore this change can be attributed to these two factors.



The category of “abiotic resource depletion, fossil fuels”, has a higher impact than last year, essentially due to the product distribution phase.

In the distribution of the product for 2020, the Italian market weighs less than the European and extra-European markets, when compared to last year. Distribution distances have therefore increased.
In 2019, about 88% of the product considered for the distribution scenario was sold in Italy; in 2020 about 56%.

9.Changes compared to the previous version of EPD

Field of application of the certificate - No changes.

Geographic scope - No changes.

Compound production phase - No changes

Tile molding phase - No modification

Distribution phase - Updated distances.

Packaging end of life phase - No changes. The data published by ISPRA are considered.

10. Main terms glossary

Global warming (GWP 100)	Ability of a greenhouse gas to influence changes in global average air temperature at ground level and subsequent changes in various climatic parameters and their effects (expressed in units of CO_2- equivalent and in a specific time frame: 100 years).
Potential for depletion of ozone	Ability of a number of chemical compounds, referred to as ODS (Ozone Depleting Substances), to attack ozone, impoverishing the ozone layer in the stratosphere.
Acidification of soil and water	A phenomenon in which atmospheric precipitation has a lower than normally pH (acid rain), causing damage to soil, lakes, surface waterways and buildings.
Eutrophication	Nutrient enrichment of streams, which causes imbalances in water ecosystems due to the excessive development for lack of nourishing substances.
Potential for formation of photo-chemical ozone	Production of compounds which, by the action of light, are capable of promoting an oxidation reaction that leads to the production of ozone in the troposphere.
Depletion of abiotic resources – Natural non-renewable elements	Consumption of non-renewable resources such as minerals, metals and other natural elements.
Depletion of abiotic resources – Energy from fossil fuels	Consumption of non-renewable resources, particularly fossil fuels.

11. References to documents and contact information

References to documents

The reference standards used in this study are part of the ISO 14000 series, and specifically the family of product standards in the ISO 14040 series:

- **UNI EN ISO 14040** (2006) - Environmental management, Assessment of the life cycle, Principles and framework.
- **UNI EN ISO 14044** (2018) - Assessment of the life cycle, Requirements and guidelines.
- **UNI EN 15804** (2012) - Sustainability of constructions - Product environmental declarations - Framework development rules by product category.

The former, which is more general in nature, describes the principles and structure of an LCA. The second, which is more operative in nature, provides the necessary support for performing a life cycle assessment.

The ISO standards in series 14020, Environmental Labels and Declarations, have also been applied, and specifically international standard UNI EN ISO 14025:2010 establishing the principles and specifying the procedures for developing ecological labels based on established parameters, containing a quantification of the environmental impact of the product's entire life cycle, calculated using a Life Cycle Assessment method.

The product's environmental performance is quantified on the basis of the requirements of the General Programme Instructions for Environmental Product Declarations and Product Category Rules 2012:01 Construction Products and construction services – version 2.33, valid until 2021-12-31.

The PCR used is publicly available on the EPD System site in approved form.

The complete study is presented in a report, Rev. 05

Contacts

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The company has been provided with technical support by Alimenta Srl - **www.alimentaonline.it**

12. Programme information and compulsory declarations

The document has been developed in accordance with the International EPD® system. The operator of the program is EPD International AB, a registered organization in Sweden.
This environmental statement is reviewed every three years.
Environmental statements published within the same product category but from different programmes may not be comparable. For more information about this statement, please refer to the website www.environdec.com

The EPD described here has been prepared according to the PCR Construction Products and construction services – version 2.3.1, valid until 2021-12-31.

Validity period of EPD: valid until 07/04/2025
CEN standard EN 15804 served as the core PCR
PCR review conducted by: Technical Committee of the International EPD® System. **e-mail: info@environdec.com"**
Independent verification of the declaration and data in accordance with ISO 14025:2006 **□ EPD Process certification X EPD verification □ Pre-verified tool**
Third Party Verifier: CSQA Certificazioni S.r.l.

13. Bibliography

- International EPD System; General Programme Instructions (EPD); ver. 2.5 of 11/05/2015.
- PCR 2012:01 “Construction products and construction services” version 2.33, valid until: 2021-12-31.
- Ecoinvent (http://www.ecoinvent.ch/) vs. 3.6.
- ISO 14025:2006. Environmental labels and declarations – Type III environmental declarations – Principles and procedures (www.iso.org).
- ISO 14040:2021 and ISO 14044:2021. ISO series on Life Cycle Assessment.
- UNI EN 15804 (2012) - Sustainability of constructions - Product environmental declarations - Framework development rules by product category.
- ISPRA- Istituto Superiore Protezione e Ricerca Ambientale (Italian Institute for Environmental Protection and Research), Urban Waste Report, 2020 Edition. Technical report 331/2020.
- ASSOCIATION OF ISSUING BODIES - European Residual Mixes, Results of the calculation of Residual Mixes for the calendar year 2019. Version 1.0, 2021-05-29.
- EPD Tarkett, Omnisports heterogeneous vinyl flooring, 22/11/2019.