COMPAC

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025
and EN 15804:2012+A2:2019 for:
Quartz, Obsidiana and Terrazzo COMPAC™

Programme
The International EPD® System
www.environdec.com

Programme operator
EPD International AB

EPD REGISTRATION NUMBER
S-P-06529-30-31

VALID UNTIL
2027.07.19

PUBLICATION DATE
2022.07.29

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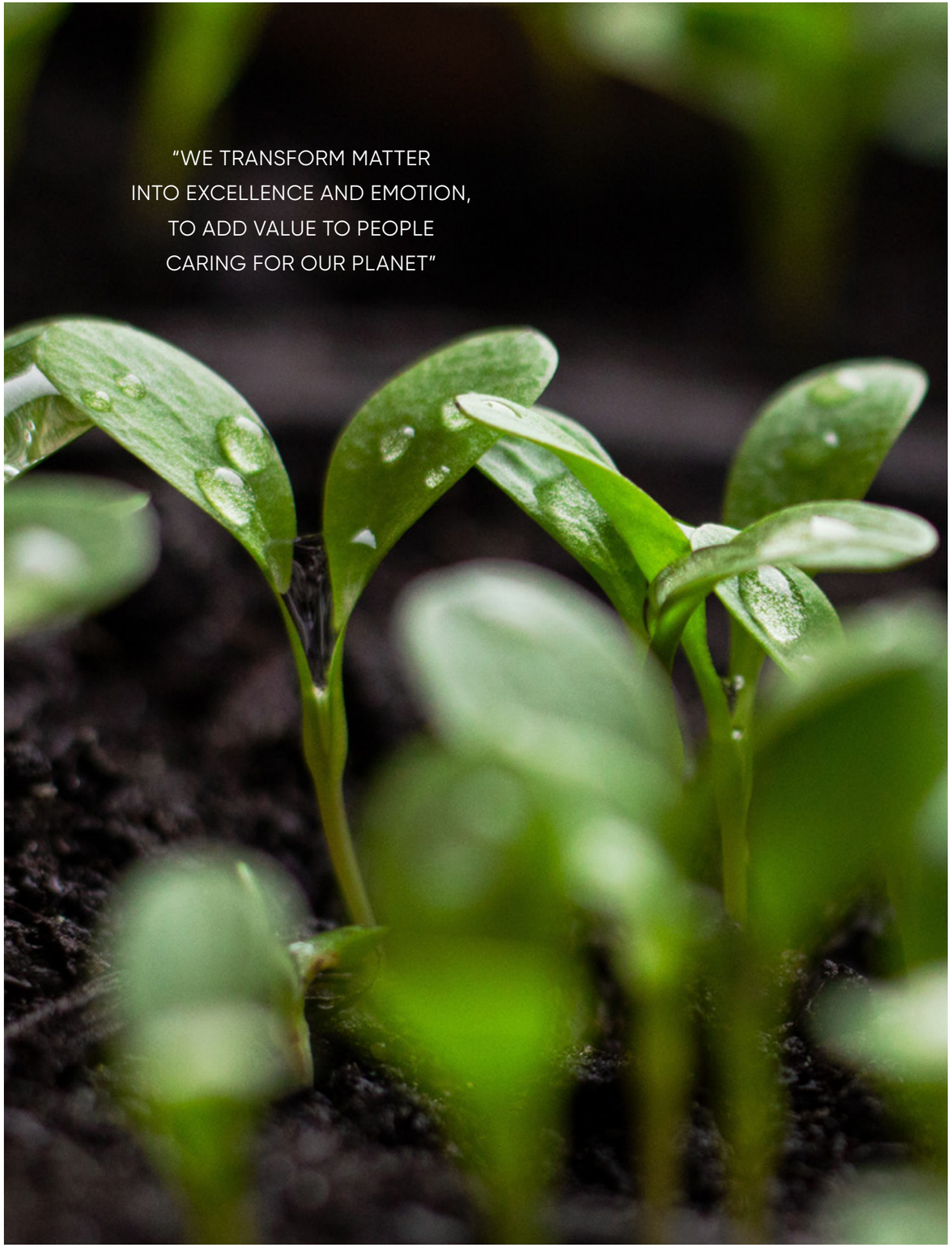
2023.03.25

VERSION 1.1

EPD®

ECO PLATFORM
EPD
VERIFIED

COMPAC



An EPD should provides 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

EXCELLENCE

IS CARING FOR THE ENVIRONMENT

We share a series of values that move and identify us: sophistication, perfection, innovation, audacity, emotion and integrity. Values that make up excellence.

Matter becomes an ally when we respect it and treat it with value. And the result of this is excellence. It is the consequence of a deep intention to be a true ally of matter.

We are aware of this secret and we work so that each of our areas is imbued with this principle.

Excellence is seeking perfection, it is keeping in mind, and actively promoting, social responsibility and the defense of the environment, both present and future.

THAT IS WHY, AT COMPAC, WE LOVE EXCELLENCE.

RESPONSIBLE EXCELLENCE

MAKING THE MOST USE OF NATURAL RESOURCES

COMPAC is one of the first eco-efficient companies in its sector. In order to minimize the impact of its industrial activity on the environment, it continuously reviews its production processes and invests heavily in R&D in the search for maximum ecological efficiency and optimal use of natural resources.

Year after year COMPAC has incorporated improvements throughout its production chain to improve energy efficiency. Thus, 100% of the energy consumed in our factories in Spain and Portugal comes from renewable sources and 98% of the water used in production processes is recycled. In addition, the block cutting system and the improvement in the efficiency of the polishing process by 90% contribute to reducing energy consumption.

Within the framework of an environmental commitment program to offset the CO^2, COMPAC has reforested more than 30,000 native trees in Portugal since 2003. In the same way, in 1992, COMPAC developed an installation system for ventilated facades, synonymous with reducing energy costs in buildings, of which COMPAC has installed more than 1.5 million square meters worldwide.

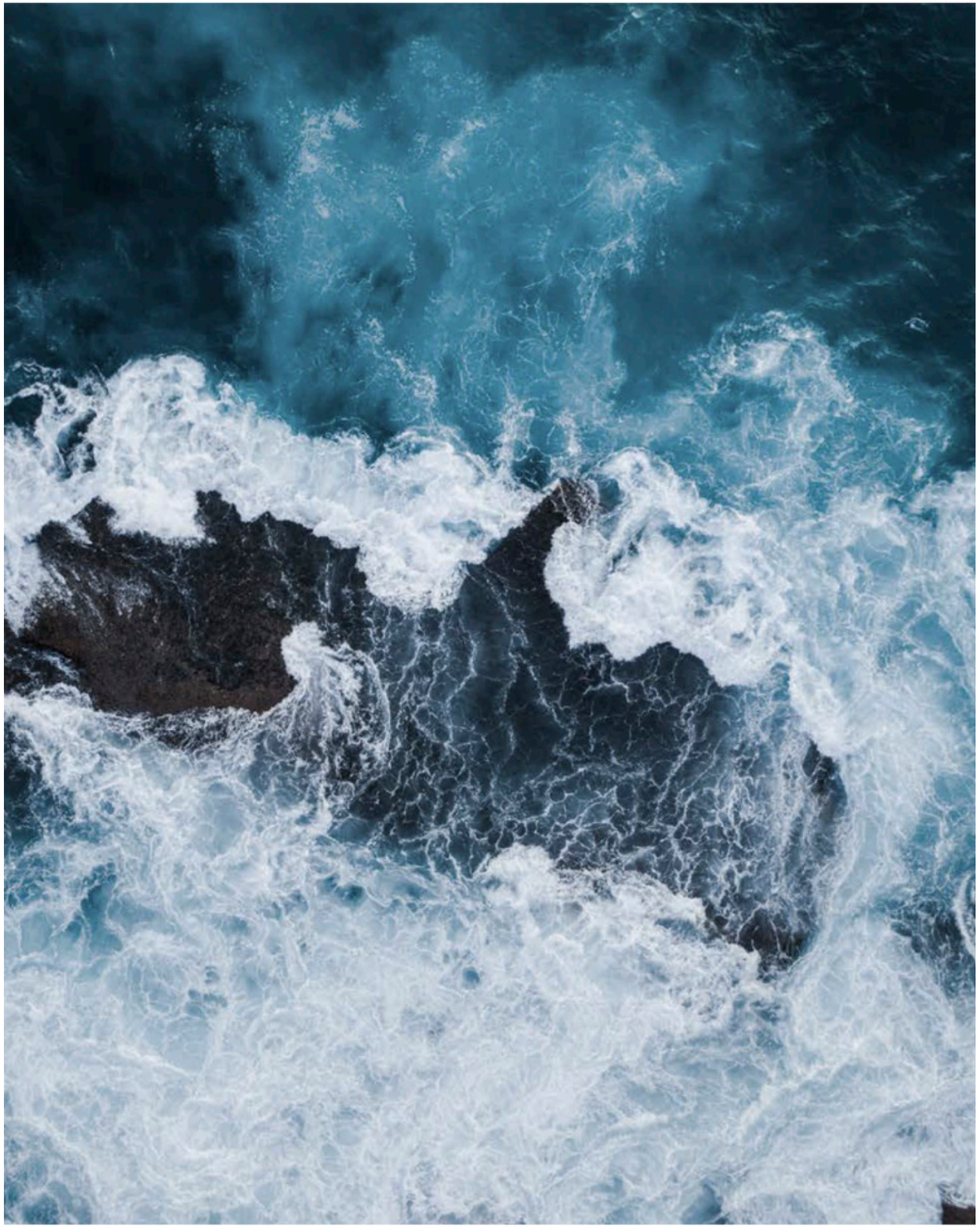
COMPAC Technological Obsidiana, Quartz and Terrazzo have the Greenguard Gold certificate, certifying that their products do not emit toxic substances that could affect indoor air quality and people's health. Specifically, it holds the seals: Air Quality Certified (Certificate of Indoor Air Quality) and The Greenguard Children & Schools Certified (Certificate of Schools and Children's Enclosures), one of the strictest in the industry.

Likewise, the use of COMPAC products in buildings contributes to earning points for the LEED certification (Leader in Energy Efficiency and Sustainable Design). This guarantee is a voluntary international standard system, based on consensus and market criteria to develop high-efficiency sustainable buildings. Out of the seven areas that are evaluated to grant the certification, the use of COMPAC materials provides points in three categories: materials and resources, indoor air quality and design innovation.

ENVIRONMENTAL COMMITMENT

LEAVE A POSITIVE MARK ON THE PLANET

We like commitment. We don't want to just look at our circle of influence, we want to see beyond and make sure we positively influence our environment for future generations. This is the raison d'être for our IQ philosophy, "Circular Science". our cyclical system with which to leave a memorable mark. Our IQ logo, as a complement to our logo, reflects this positive objective.



2025 STRATEGIC SUSTAINABILITY PLAN

OUR COMMITMENT THROUGH AN AMBITIOUS PLAN

Our goal is to develop and lead a company that is sustainable over time, through respect and excellence towards our collaborators, our activities and our planet, through ethical, responsible and transparent behaviour. Founded in 1975, COMPAC is the leading Spanish firm specialized in the manufacture and distribution of terrazzo, quartz and obsidian surfaces for architecture and design. A company with a deep-rooted culture of technological innovation oriented to satisfy not only the functional needs of construction and housing, but also at achieving more personal, attractive and healthy spaces.

We have created our 2025 Strategic Sustainability Plan with the best practices to be a benchmark in sustainability and social responsibility, with 16 practical action objectives, within the UN 2030 agenda and through 5 Strategic Axes.

_ 2025_
STRATEGIC SUSTAINABILITY PLAN

COMPAC
ETHICAL

Promoting a culture of integrity and responsibility and operating with ethics and transparency, which will lead to promoting trust and support that will consolidate a sustainable business.

COMPAC
COMMITTED

Committing ourselves to the economic and social development of the territories where we operate, giving specific needs for children, job reintegration and the environment, listening to their demands and current challenges.

The Responsible Sense of COMPAC

COMPAC
CIRCULAR

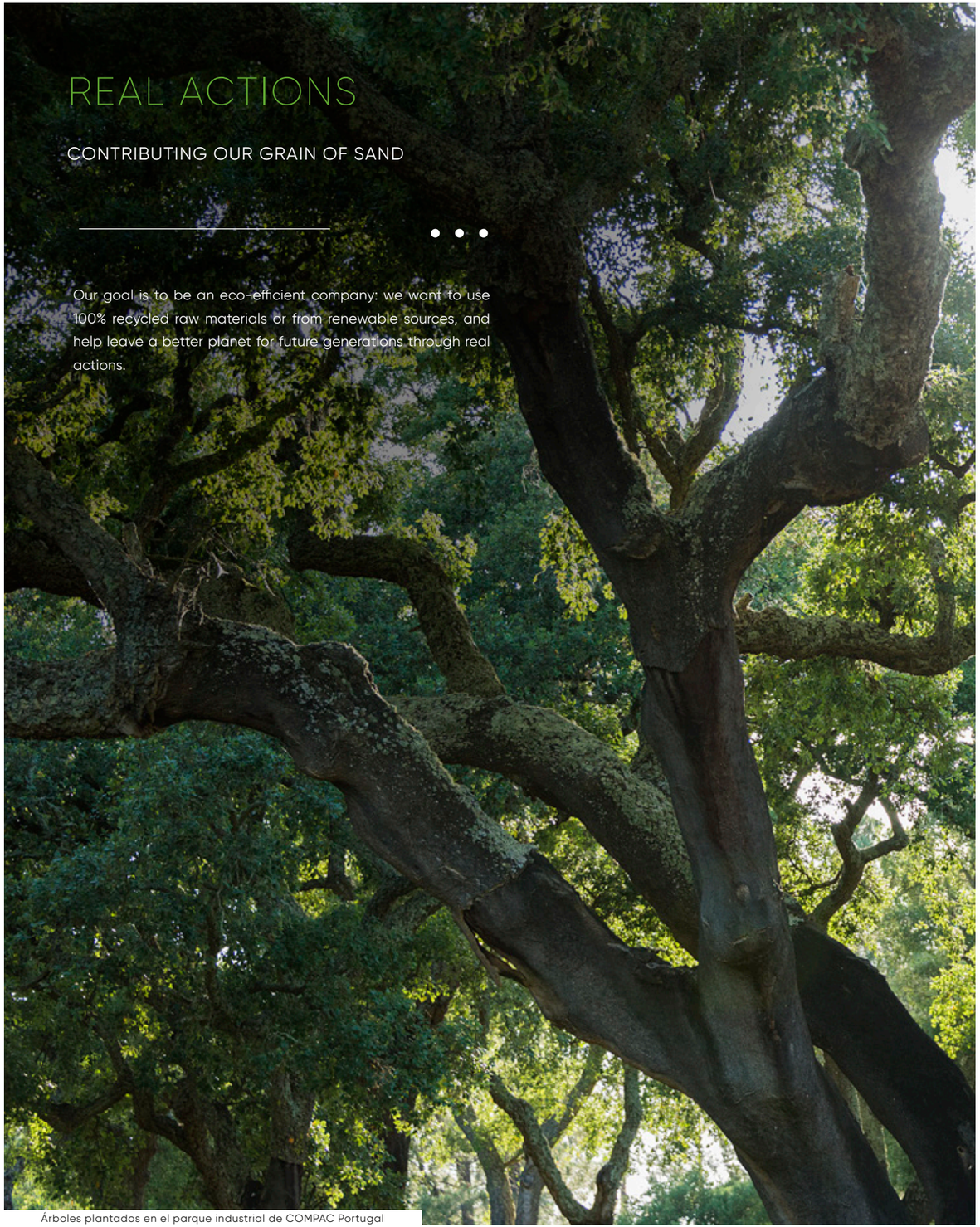
Investing in sustainable innovation towards a circular model, with innovative products and efficient solutions. With sustainable raw materials, efficient resources and processes with less environmental impact and less waste.

COMPAC
SUSTAINABLE

Advancing towards environmental excellence by adopting high standards of quality and sustainability, and promoting carbon neutral production.

COMPAC
DIVERSE

Empowering people through integration, respect, listening, motivation and leadership drive. Promoting the growth and development of our professionals, through useful tools. And training 100% of employees in our culture of sustainability.



REAL ACTIONS

CONTRIBUTING OUR GRAIN OF SAND

Our goal is to be an eco-efficient company: we want to use 100% recycled raw materials or from renewable sources, and help leave a better planet for future generations through real actions.

Árboles plantados en el parque industrial de COMPAC Portugal

100%
RAW MATERIALS
RECYCLED
O RENEWABLE AS OUR OBJECTIVE

90%
INCREASE IN
EFFICIENCY
IN THE POLISHING OF SLABS

95%
RECOVERED WATER AND
REUSED
IN AN INNOVATIVE WAY

30.000
NATIVE TREES
REFORESTED
IN PORTUGAL SINCE 2003

1.5
MILLIONS OF
SQUARE METERS
INSTALLED WITH VENTILATED FACADES, WHICH REDUCES ENERGY EXPENDITURE

100%
SOURCES
RENEWABLE
FOR THE SUPPLY OF ELECTRICAL ENERGY

25%
GREATER
EFFICIENCY
OF RAW MATERIALS IN THE CUT PROCESS OF BLOCKS

2011
STARTING THE USE OF
BIO-RESINS
PLANT-BASED RENEWABLE

"THE PLANET NEEDS A BREAK.
NEEDS OUR RESPECT. A SUSTAINABLE
COEXISTENCE IS POSSIBLE".

PACO SANCHIS, CEO COMPAC.

Reforestation of 30,000 native trees in the COMPAC Portugal industrial park

GENERAL INFORMATION

PROGRAMME INFORMATION

Programme
The International EPD® System.
Address
EPD International AB. Box 210 60, SE-100 31 Stockholm, Sweden.
www.environdec.com • info@environdec.com

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 (EN 15804:A2) (version 1.11).

CR 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: Eco Intelligent Growth, info@ecointelligentgrowth.net

Third-party verification
Procedure for follow-up of data during EPD validity involves third party verifier:
Ø Yesí / O No

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
EPD verification by individual verifier.
Third-party verifier: Patxi Hernández Iñarra, AUREA CONSULTING IRLANDA.

Approved by: The International EPD® System

The EPD owner has the sole ownership, liability, 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. For further information about comparability, see EN 15804 and ISO 14025.

Slab warehouse at COMPAC Portugal

COMPANY INFORMATION

OWNER OF THE EPD: COMPAC CORPORATE, S.L. (COMPAC®)

Founded in 1975, COMPAC is the leading Spanish firm specialized in the manufacture and distribution of Terrazzo™, Quartz™ and Obsidiana™ Surfaces for architecture and design. A company with a deep-rooted culture of technological innovation aimed at satisfying not only the functional needs of construction and housing, but also at achieving more personal, attractive and healthy spaces.

COMPAC® has two production centers for Terrazzo™ and Obsidiana™ (Valencia, Spain) and Quartz™ (Santarém, Portugal), with a joint capacity that exceeds 4.5 million m² per year.
A large company made up of more than 400 professionals, whose common goal is to improve COMPAC® products day by day and offer a more complete and convenient service to its customers.

Over the years, the company has worked with internationally renowned designers, artists and architects, applying their versatile materials in some of the most exclusive designs and thereby demonstrating their relevance for even the most ambitious of projects. COMPAC® is known for its significant investments in Research, Development and Innovation, as this is the backbone around which its main values revolve: maximum sustainability and efficient design. We continue along a path undertaken since the company was conceived and which is part of its personality: the recycling of materials through technological innovations to produce a quality product that improves the characteristics and performance of the original product without losing its natural values.

All designs produced with IQ Circular Science are manufactured in a sustainable way, from 100% renewable energies and rainwater from which more than 98% is reused. In addition, IQ Circular Science Pro include recycled raw materials in the production process, making it possible to recycle the materials.

Today, COMPAC® enjoys a strong international presence, distributed in more than 60 countries around the world. .

CONTACT PERSON
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Work meeting at the offices of COMPAC Spain

Solar panels on the roof of the factory in COMPAC Portugal

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QuartzCOMPAC™

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PRODUCT INFORMATION

PRODUCT NAME: QuartzCOMPAC™

> Production site:
SILICALIA PORTUGAL Indústria e Comercio de Aglomerados de Pedra S.A.
Location: Pego, Abrantes, Santarém, PORTUGAL.

Product-related or management system-related certifications
Health Product Declaration (HPD), LEED, WELL and BREEAM, NSF, OU Kosher, Greenguard and Greenguard Gold.

PRODUCT IDENTIFICATION

- Absolut Blanc
- Alaska
- Arena
- Carrara
- Ceniza
- Cobweb
- Glaciar
- Ice Black
- Ice White
- Ice Max Pure
- Ice Max Black
- Nocturno
- Nebulous Gold
- Unique Carrara
- Unique Argento
- Unique Arabescato
- Unique Calacatta
- Unique Calacatta Gold
- Unique Calacatta Black
- Unique Calacatta Macchia Vecchia
- Unique Pietra
- Unique Bianco
- Unique Portoro
- Unique Statuario
- Unique Statuario Gold
- Smoke Gray
- Unique Venatino
- Unique Marquina
- Venecia
- Plomo
- Snow
- Moon
- Luna
- Zement Ice

PRODUCT DESCRIPTION

QuartzCOMPAC™

Agglomerated stone made up of Quartz (>90%), polyester resin and additives.

Quartz™ COMPAC® is a product of exceptional resistance and stunning beauty. With the appearance and feel of natural Quartz™ but with a better performance thanks to its high resistance. It comes in an extensive range of colours, designs, sizes, thicknesses and ornamentations. It is the ideal product for kitchen countertops, floors, walls and all kinds of indoor Surfaces that have to withstand intensive use.

In our manufacturing processes, we give our stone a series of new properties, which are better adapted to daily human needs: impermeability, hardness, resistance. We preserve the original values while improving them thanks to our creativity.

The elegance and beauty of our Quartz™ has attracted renowned artists and designers like Arik Levy with which we have created an exclusive collection called Genesis that through large Quartz™ COMPAC® slabs has managed to represent the effect of frozen lakes. The quality of Quartz™ COMPAC® is certified by multiple certificates, among which stand out NSF that ensures that it is a safe material for contact with food, Greenguard that accredits the safe use of indoor surfaces and the LEED certificate, that supports our commitment to sustainable construction. A crucial issue for our company because we have been committed to sustainability and transforming our processes for the environment for more than 45 years. This commitment has materialized through our philosophy IQ Circular Science "The responsible sense of COMPAC®", which includes our actions, production processes, improvements, etc looking to continue innovating to promote architecture and sustainable design.

Quartz™ Surfaces are manufactured in three specific thickness: 12 mm, 20 mm and 30 mm.

The designs and finishes of Quartz™ COMPAC® together with the fact that they are very simple to fit, form part of the long list of advantages of this luxurious product which includes:

- Minimum water absorption.
- Maximum hardness.
- Maximum resistance to impact and flexion.
- Resistance to acids, oils, liquids, etc.
- High resistance to abrasion.
- Low-cost maintenance and easy to clean.
- Ideal for kitchens and bathrooms.

UN CPC CODE
Division 376 "Monumental or building stone and articles thereof".
• Class 3769, Subclass 37690 Other worked monumental or building stone and articles thereof; other artificially colored granules, chippings and powder of natural stone; articles of agglomerated slate.

GEOGRAPHICAL SCOPE
• Production site location: Pego, Santarém, Portugal.
• Use and end-of-life location: Global.

PRODUCT DESCRIPTION

PROPERTY[1]	UNITS OF MEASURAMENT	RESULTS
Fire reaction UNE-EN 13501-1	Euroclasses	A2fl s1 – Bfl s1
Thermal expansion coefficient UNE EN 14617-11	$^{O}C^{-1}$	1,8 – 2,5 x 10^{-5}
Flexural resistance UNE EN 14617-2	MPa	>50
Surface hardness UNE EN 101:1991	Mohs	6-7
Impact resistance UNE EN 14617-9	J	6-15
Slip resistance UNE EN 14231:2003	USRV	Polish: 6 wet / 37 dry Matt: 9 wet / 45 dry
Abrasion resistance UNE-EN 14617-4	mm	26 - 29
Water absorption UNE EN 14617-1	%	0,04 – 0,07
Apparent density UNE EN 14617-1	kg/m^3	2050 – 2450
Chemical resistance UNE EN 14617-10	–	**To alkalis:** C4 (Material keeps at least 80% of their resistance reference value after 8 hours of basis attack). **To acids:** C4 (Material keeps at least 80% of their resistance reference value after 8 hours of acid attack).

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[1] The values in this table are only typical values and not vinculant. For more information or test reports please contact our quality department.

LIFE CYCLE ANALYSIS / INFORMATION

DECLARED UNIT

Since the final product is marketed in three different thicknesses (12 mm, 20 mm and 30 mm), the declared unit selected for Quartz™ Surfaces is:

• 1000 kg of stone surface (1 t).

Additionally, based on the thickness of use, the equivalent results from the LCA study may be applicable to:

• 1 m^2 of surface covered with the product, by thickness.

This document will be used for B2B communication, with a global scope.

REFERENCE SERVICE LIFE

COMPAC® products described are used as finishing materials in construction of buildings. As a complementary reference, the useful life of these buildings is estimated to be greater than 50 years, and it is possible that the use of COMPAC® products equals this range of service, since due to their nature and composition, these materials are of high quality and proven durability.

TIME REPRESENTATIVENESS

The production period included for the analysis was from January 1, 2020 to December 31, 2020.

DATABASE(S) AND LCA SOFTWARE USED

The SimaPro 9.3 software and the ecoinvent 3.8 database have been used for the life cycle analysis with the "cut-off" system model and the "polluter pays" principle, which considers that "the philosophy underlying is that a producer is fully responsible for the disposal of their waste and does not receive any credit for the supply of recyclable materials.

Additionally, the principle of modularity has been applied to assign the waste treatment and disposal processes of the productive activities in the scope of the study.

The assessments methods selected are those corresponding to the EN 15804:2012+A2:2019 standard and compatible with the ecoinvent 3.8 database, including the methods determined for each of the indicators by impact category.

DESCRIPTION OF SYSTEM BOUNDARIES

The selected scope for the life cycle analysis is: Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional module A4).

A
PHASE OF
PRODUCTION /

A1. RAW MATERIALS EXTRACTION

Regarding the types of raw materials, the quantities and descriptions of the different types of materials and their origins have been compiled. In the case of Quartz™ products, an average composition has been determined for each of the product models/series and, in turn, based on the production reported for the study period, the most representative average composition model in volume has been defined. and with an equivalent model in the reference database. Secondary raw materials from recycled glass have been accounted for, also. The extraction and processing of raw materials is included, as well as upstream energy consumption.

A2. TRANSPORTATION OF RAW MATERIALS

The production site has reported the place from where the raw materials are transported and the transport mode used to move the raw materials from the place of origin to the production plant. For each of the raw materials, considering their consumption according to the reported production, a t*km ratio has been determined, which is consolidated by type of transportation used, for the representative model.

A3. PRODUCTION (MANUFACTURING)

The general manufacturing processes within the operational limits of Quartz™ production are presented in the following figure and listed below:

1. Reception of the raw material.
2. Quality control.
3. Storage.
4. Mixing with resins and pigments.
5. Mixture distribution.
6. Pressing.
7. Curing (at 110°C).
8. Cooling.
9. Calibrated and polished.
10. Quality control.
11. Table Storage.
12. Cut to size.
13. Transportation.

The main inputs of the manufacturing system are:

• Energy: Electricity and Fuels.

• Water: Well intake or network consumption.

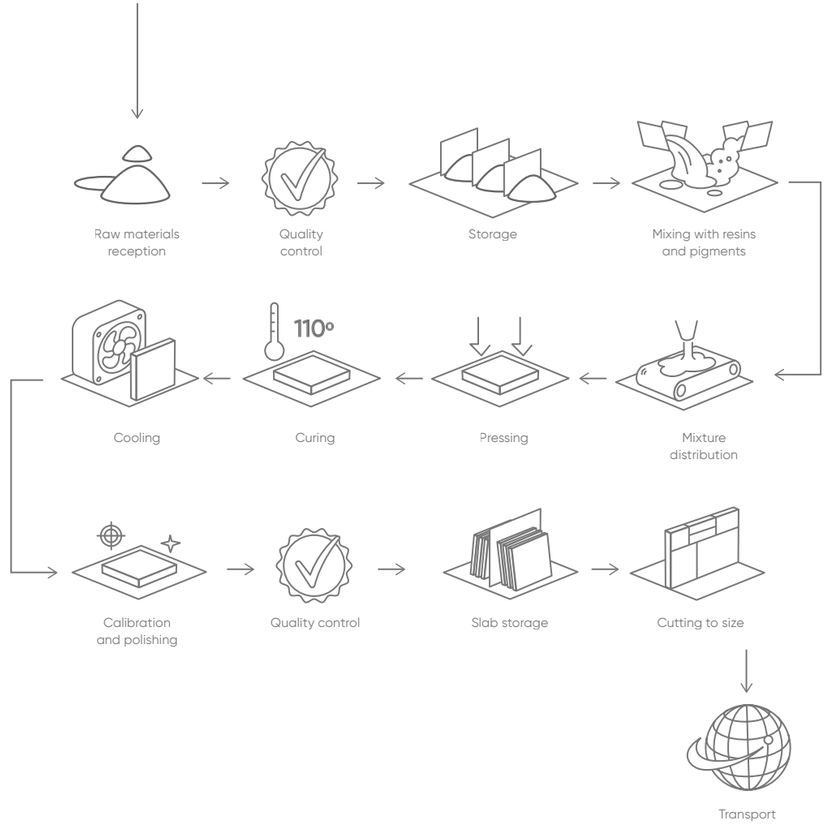
• Consumables: External raw materials, waste to be processed and/or recovered.

The main outputs of the production system are:

• Waste generated: Hazardous, non-hazardous.

• Emissions: Air, water.

PRODUCTION
PROCESS OF
QUARTZ



A4. PRODUCT TRANSPORT

Considering the wide distribution of products at an international and regional level, based on the sales distribution report, the total production sold by family and by country of destination is recorded. For each of the destinations, according to information for internal use, the export ports in the country of origin and import ports in the destination countries are determined. An average transportation distance to the construction site is represented by the distance to the main city in each destination country.

For each case, the transport distances are determined and associated with a means of transport: road freight vehicle, sea container ship and road freight vehicle. Based on the distribution of sales by country, the average distance scenario is determined for each means of transport and each of the product families, which is used in the modelling. The detail of the technical parameters for the transport model is obtained from the ecoinvent 3.8 database and its reference technical studies.

A5. INSTALLATION (CONSTRUCTION MODULE)

Considering the diverse and multiple applications by type of product and based on the indications of the design criteria and expert criteria, described in the installation manuals, the representative average scenario selected considers the most extensive use to be as countertops solutions, which accounts to 90% of the most common product applications. Other applications include use in floors, walls, or columns.

Since final installation may require additional finishing processes (e.g., cutting) based on design and selected functional use, there is no specific average scenario to model installation process considering a standard amount of finished product, ancillary materials for installation, power tool usage, and material scrap or loss rates.

The LCA study has excluded this module from the impact analysis estimation.

PRODUCT TRANSPORT MODULE

PARAMETER	VALUE EXPRESSED PER DECLARED UNIT	
Type and fuel consumption of the vehicle, type of vehicles used for the transport; for example, trucks for long distance, boat, etc.	Transport, freight, lorry 16-32 metric t, EURO5 {RER}| transport, freight, lorry 16-32 metric t, EURO6 | Cut-off, U	Transport, freight, sea, container ship {GLO}| transport, freight, sea, container ship | Cut-off, U
Distance	km by truck: 617,13	km by ship: 6409,19
Capacity utilization (including empty return trip)	0,60	0,70
Apparent density	2050 - 2450kg/m^3	2050 - 2450kg/m^3
Useful capacity factor	< 1	< 1

B
PHASE OF
USE

Based on their design features and components, Quartz™ COMPAC® products have a service life of at least 50 years. Depending on the installation conditions and multiple applications for final finishing, maintenance needs are limited to cleaning routines (daily or weekly). The company has a manual of recommendations to maintain the quality and finish conditions of the product throughout the useful life of the material. Since no specific scenario is defined as representative for the impact analysis, this module is not declared in the LCA study.

C
PHASE OF
END OF LIFE /

The conceptual approach for planning the end-of-life phase modules is described below.

C1. DEMOLITION.

There are no statistics that demonstrate usual practices of dismantling for reuse or recovery of the material at the end of its lifespan. A generic demolition process is assumed, with the use of heavy equipment, as well as the generation of air emissions during this activity, according to the default process in the ecoinvent 3.8 database.

C2. TRANSPORTATION.

Given the wide distribution of the product in the international market, the transport distances to final disposal sites for inert waste are variable. Considering national and local conditions, an average scenario of 50 km of road transport is assumed using the default processes of the ecoinvent 3.8 database.

C3. WASTE PROCESSING.

Although the material could have a recovery potential for reuse (total or partial) or transformation into recycled aggregates, there is no evidence of widespread practices at a global level for the recovery of the material after the demolition phase for the purpose of recycling the material. product. Commonly, all the material is finally disposed in a sanitary landfill, without any recovery. Therefore, the model assumes the scenario of zero impacts associated with this life cycle module.

C4. FINAL DISPOSAL.

In accordance with common practices in the local market, demolition waste is usually deposited as inert material in a sanitary landfill, without material recovery actions. The final disposal scenario in a sanitary landfill is assumed according to the default processes of the ecoinvent 3.8 database.

Raw material silos at COMPAC Spain

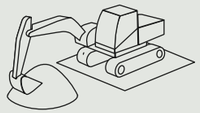
END OF LIFE PHASE MODULE

MÓDULE	PARAMETER	UNIT (PER DECLARED UNIT)	VALUE
C1 DEMOLITION	Process of collection specified by type	Kg collected in a separate	0
		Kg collected mixed with waste from construction	1 kg
C2 TRANSPORT	Type and fuel consumption of the vehicle, type of vehicles used for the transport	Transport, freight, lorry 16-32 metric t, EURO6	Diesel consumption: 0,0366 kg/t*km
	Distance	Km	50
	Use of the capacity (including the return in vacuum)	%	0,60
	Apparent density of transported products	kg/m^3	2050 - 2450
	Useful capacity factor	---	1
C3 WASTE TREATMENT	System recovery specified by type	kg for reuse	0
		kg for recycle	0
		kg for energy recovery	0
C4 DISPOSAL	Disposal specified by type	kg of product for final deposition	1

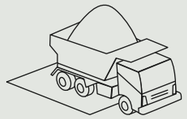
BENEFITS AND LOADS

BEYOND THE SYSTEM BOUNDARIES

In accordance with the forecasts indicated, the model assumes a scenario of total disposal of the demolition waste to a sanitary landfill. There is no information available to assume demolition waste recovery scenarios in the countries covered by the LCA study.

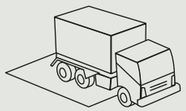


A1 EXTRACTION OF RAW MATERIALS
Primary raw materials
Secondary raw materials
Fuels
Energy

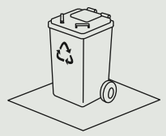


A2 TRANSPORTATION OF RAW MATERIALS
Primary raw materials
Secondary raw materials
Consumables

A3 MANUFACTURING PROCESS
Primary fuels
Energy
Ancillary materials
Packaging materials
Water
Waste



A4 FINISHED PRODUCT TRANSPORTATION
Road transport
Ship transport



C1-C4 END OF LIFE
Demolition
Transport
Final disposal

LCA PRACTITIONER.
Eco Intelligent Growth, info@ecointelligentgrowth.net

ASSUMPTIONS:

PRODUCTION STAGE

All data is representative of actual production management. Electrical generation mix was modelled based on green energy certificates provided by the electricity supplier to the manufacturer and the national electrical annual reports. Since all energy consumed comes from exported certified hydropower.

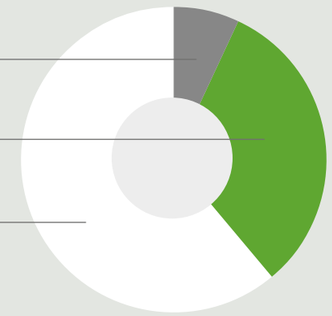
ENERGY MIX FROM 100 % RENEWABLE ENERGY SUPPLIER

BASED ON PORTUGAL ENERGY MIX FROM ECOINVENT 3.8.

E, HV {ES} | EP, hydro, pumped storage | Cut-off, U
7%

E, HV {ES} | EP, hydro, reservoir, non-alpine region | Cut-off, U
32%

E, HV {ES} | EP, hydro, run-of-river | Cut-off, U
61%



E, HV {ES} | EP = Electricity, high voltage {ES} | Electricity production

A. Total production

Based on the internal records from the production site, the amount of materials produced per year, by type of product, was accounted and reported for the year of study. Raw materials losses were accounted in the analysis.

B. Electricity consumption

The total electrical energy consumed in its operations has been reported. The facilities operation in Portugal only produces Quartz™ Surfaces coverings, with all energy consumption directly attributable to the total production of these construction materials.

C. Fuel consumption

The production site has reported the total fuel consumed in its operations. Fuel consumption includes diesel (L/year), gas (Nm^3/year), and propane gas (kg). Once the consumption ratio per kg of production has been calculated, the conversions have been applied (based on the density and caloric value of each fuel) to obtain the equivalence in energy units (MJ) for the modelling of the process.

D. Water consumption

The production site has reported the volume of water consumption by type of supply source (public or private network water). The annual consolidated consumption in the industrial process is obtained. Recorded consumption is assigned to the material production process. The specific consumption per t of product is calculated in m^3/kg and its equivalence in L/kg.

E. Waste generation

Through the annual report from the production site, municipal solid waste, non-hazardous recyclable waste, recyclable hazardous waste and hazardous waste to be disposed of are identified and accounted for. For each type of waste, the generation ratio is calculated with respect to the total production of the production site. For materials sent to recycling facilities, a transport distance of 50 kilometres to the treatment provider has been assumed, but no treatment specific burdens were considered, following the modularity and polluter pays principle.

F. Consumption of packaging materials

Through the annual report from the production site, the packaging materials used for the dispatch and marketing of products in their different presentations are identified and accounted for. For each of these, the product ratio (cardboard and pallet) per declared unit has been determined, selecting the most critical scenario, under conservative criteria for modelling. Additionally, the company has identified the use of other materials such as strapping, rachet, wood, inflatable bags, plastic corners, and crossbar boards that are used in container exports, however, the analysis of the available inventory data does not allow the reliable estimation of quantities for these materials, which are then excluded from the LCA.

Water recycling plant in the factory of Portugal

CUT-OFF RULES.

In general, the cut-off criteria are 1% of the consumption of renewable and non-renewable primary energy and 1% of the total input mass of the manufacturing process (according to the UNE-EN 15804 standard). In the evaluation, all available data of the production process is considered, i.e., all raw materials used, ancillary materials used and energy consumption using the best available data sets in the reference database. The following processes have been excluded:

• Manufacture of equipment used in production, infrastructure, or any other capital goods.

• Packaging materials for products dispatched in container: strapping, rachet, wood, inflatable bags, plastic corners, and crossbar slabs.

• Transportation of personnel to the plant or from the production site.

• Long-term emissions.

DATA QUALITY.

All primary data used for the environmental impact estimation was obtained from production data registered by the manufacturer at the reported production site for the year of assessment. All secondary data was selected from ecoinvent 3.8 database considering most important parameters regarding geographical, technological, and temporary representativeness.

ALLOCATION.

Since all primary data used in the LCA is directly related to Quartz™ Surfaces covering production and there are no other products or coproducts manufactured at this production site, no allocation criteria were required for the data analysis of production information (e.g., raw materials used). General system inputs and outputs (i.e., energy, water, and waste) were directly allocated to total annual production (by mass). Product distribution and end-of-life scenarios were accordingly created for the declared unit (by mass). The principle of modularity has been followed, as well as the polluter pays principle.

ENVIRONMENTAL ASSESSMENT METHODS.

The indicators and impact categories used for the environmental assessment, as well as the assessment methods were those indicated in standard EN 15804+A2 and the program operator PCR.

MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION.

STAGES →	PRODUCT			BUILDING PROCESS		USE STAGE							END OF LIFE				RESOURCE RECOVERY
	RAW MATERIAL SUPPLY	TRANSPORT	MANUFACTURING	TRANSPORT	CONSTRUCTION INSTALLATION	USE	MAINTENANCE	REPAIR	REPLACEMENT	REFURBISHMENT	OPERATIONAL ENERGY USE	OPERATIONAL WATER USE	DE-CONSTRUCTION DEMOLITION	TRANSPORT	WASTE PROCESSING	DISPOSAL	REUSE-RECOVERY-RECYCLING-POTENTIAL
MODULE	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
MODULES DECLARED	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
GEOGRAPHY	PT	PT	PT	GLO	–	–	–	–	–	–	–	–	GLO	GLO	GLO	GLO	GLO
SPECIFIC DATA USED	> 90% GWP			–	–	–	–	–	–	–	–	–	–	–	–	–	–
VARIATION – PRODUCTS	(-47,10%) – (39,10%)			–	–	–	–	–	–	–	–	–	–	–	–	–	–
VARIATION – SITES	NR. One production site			–	–	–	–	–	–	–	–	–	–	–	–	–	–

X: included / ND: not declared / NR: not relevant / PT: Portugal / GLO: Global.

CONTENT INFORMATION

Quartz™ COMPAC® Surfaces can have a variable composition range. The composition range of the product is shown below. For its representation in the calculation model, an average product has been represented at the composition level, based on the contribution to the environmental impact of the different raw materials.

The determination of the average composition has been carried out through a sensitivity analysis to see which raw materials have a higher impact within the composition of the product, varying the potential composition of those raw materials that have a greater contribution to the environmental impact of the product. The average composition is represented by the scenario considering the lowest and highest environmental impact for the consumption of raw materials.

DECLARATION OF DANGEROUS SUBSTANCES.

The declared products contain less than 0,1% or no dangerous substances, from the list of "Candidate list of Substances of Very High Concern". All products made of materials declared here comply with the REACH Regulation (CE) number 1907/2006, regarding the registration, evaluation, authorization and restriction of chemical substances.

INFORMATION ON SAFETY AND HEALTH RELATED TO RESPIRABLE CRYSTALLINE SILICA (SIO2)

Respirable crystalline silica is a basic component in soil, sand, granite, quartz and many other minerals. When workers break, cut, perforate or chip these objects, they can generate suspended respirable crystalline silica particles which may be a health hazard if the workers are not wearing proper protection and workplaces do not have the relevant controls to reduce silica dust.

HAZARD STATEMENTS

- H372: Causes lung damage after repeated prolonged exposure (inhalation)
- H350i: Can cause cancer by installation
- H335: Can irritate respiratory tracts

CONTENT INFORMATION

PRODUCT COMPONENTS	WEIGHT / KG	POST-CONSUMER MATERIAL, WEIGHT-%	RENEWABLE MATERIAL, WEIGHT-%
QUARTZ™ AND OTHER MINERAL MATERIALS	0,93 – 0,95	0,21 % - 0,23 %	0,00 %
POLYESTER OR NATURAL RESIN	0,05 – 0,07	0,00 %	0,00 %
ADDITIVES (PIGMENT)	0,01	0,00 %	0,00 %
TOTAL	**1,00**	**0,20 % - 0,22 %**	**0,00 %**

PACKAGING MATERIALS	WEIGHT / KG	WEIGHT - % / VERSUS THE PRODUCT
CARDBOARD BOX	0,07	6,72 %
WOOD PALLET	0,02	2,44 %
TOTAL	**0,09**	**9,16 %**

ENVIRONMENTAL INFORMATION

All data results are representative for 1000 kg of Quartz™ COMPAC® Surfaces, as declared unit. Estimated impact results are only relative statements that do not indicate impact category endpoints, exceeding threshold values, safety margins, or risks. The declared product is an average that is not available for purchase on the market.

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	7,42E+02	5,84E+01	3,06E+02	1,11E+03	1,33E+02	ND	ND	3,76E+00	6,75E+00	0,00E+00	5,35E+00	0,00E+00
GWP-fossil	kg CO_2 eq.	7,33E+02	5,84E+01	3,47E+02	1,14E+03	1,33E+02	ND	ND	3,76E+00	6,74E+00	0,00E+00	5,27E+00	0,00E+00
GWP-biogenic	kg CO_2 eq.	6,89E+00	1,84E-02	-4,64E+01	-3,95E+01	4,03E-02	ND	ND	1,11E-03	2,22E-03	0,00E+00	7,97E-02	0,00E+00
GWP-luluc	kg CO_2 eq.	1,47E+00	5,70E-04	4,95E+00	6,42E+00	1,46E-03	ND	ND	9,27E-05	5,46E-05	0,00E+00	1,91E-03	0,00E+00
ODP	kg CFC 11 eq.	8,56E-05	1,36E-05	4,30E-05	1,42E-04	3,03E-05	ND	ND	8,41E-07	1,60E-06	0,00E+00	9,36E-07	0,00E+00
AP	mol H+ eq.	3,68E+00	4,95E-01	1,81E+00	5,98E+00	1,91E+00	ND	ND	4,05E-02	1,34E-02	0,00E+00	4,91E-02	0,00E+00
EP-freshwater	kg PO_4^{3-} eq.	5,49E-02	9,42E-05	3,51E-02	9,01E-02	2,17E-04	ND	ND	8,12E-06	1,06E-05	0,00E+00	1,94E-04	0,00E+00
EP-freshwater	kg P eq.	1,79E-02	3,07E-05	1,14E-02	2,93E-02	7,07E-05	ND	ND	2,65E-06	3,46E-06	0,00E+00	6,33E-05	0,00E+00
EP-marine	kg N eq.	5,65E-01	1,14E-01	4,27E-01	1,11E+00	4,93E-01	ND	ND	1,82E-02	2,23E-03	0,00E+00	2,03E-02	0,00E+00
EP-terrestrial	mol N eq.	5,74E+00	1,27E+00	3,62E+00	1,06E+01	5,47E+00	ND	ND	1,99E-01	2,48E-02	0,00E+00	2,23E-01	0,00E+00
POCP	kg COVDM eq.	2,24E+00	3,40E-01	1,16E+00	3,75E+00	1,41E+00	ND	ND	5,45E-02	8,73E-03	0,00E+00	6,16E-02	0,00E+00
ADP-minerals & metals*	kg Sb eq.	2,34E-02	2,17E-06	7,79E-03	3,12E-02	4,27E-06	ND	ND	1,94E-07	2,93E-07	0,00E+00	2,40E-07	0,00E+00
ADP-fossil*	MJ	1,27E+04	8,18E+02	5,71E+03	1,92E+04	1,83E+03	ND	ND	5,20E+01	9,57E+01	0,00E+00	7,01E+01	0,00E+00
WDP*	m^3	1,47E+03	-1,39E-01	7,01E+02	2,17E+03	-3,14E-01	ND	ND	1,34E-02	-1,60E-02	0,00E+00	1,75E-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.

POTENTIAL ENVIRONMENTAL IMPACT
ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	6,98E+02	5,80E+01	3,44E+02	1,10E+03	1,33E+02	ND	ND	3,72E+00	6,70E+00	0,00E+00	5,20E+00	0,00E+00

[2] **THE INDICATOR** includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

USE OF RESOURCES

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	3,50E+03	1,22E+00	2,05E+03	5,55E+03	2,68E+00	ND	ND	8,39E-02	1,47E-01	0,00E+00	1,65E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	1,19E+03	1,19E+03	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	3,50E+03	1,22E+00	3,24E+03	6,74E+03	2,68E+00	ND	ND	8,39E-02	1,47E-01	0,00E+00	1,65E+00	0,00E+00
PENRE	MJ	1,19E+04	8,68E+02	6,09E+03	1,88E+04	1,94E+03	ND	ND	5,52E+01	1,02E+02	0,00E+00	7,45E+01	0,00E+00
PENRM	MJ	1,74E+03	0,00E+00	2,99E+01	1,77E+03	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,36E+04	8,68E+02	6,12E+03	2,06E+04	1,94E+03	ND	ND	5,52E+01	1,02E+02	0,00E+00	7,45E+01	0,00E+00
SM	kg	2,00E+00	0,00E+00	0,00E+00	2,00E+00	0,00E+00	ND	ND	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	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	3,54E+01	2,41E-03	1,50E+01	5,04E+01	5,71E-03	ND	ND	8,78E-04	2,63E-04	0,00E+00	8,42E-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 PRODUCTION

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	8,20E-03	1,84E-03	4,85E-03	1,49E-02	3,59E-03	ND	ND	1,36E-04	2,52E-04	0,00E+00	1,50E-04	0,00E+00
Non-hazardous waste disposed	kg	1,38E+02	3,46E-02	5,74E+01	1,96E+02	7,91E-02	ND	ND	3,20E-03	3,95E-03	0,00E+00	1,00E+03	0,00E+00
Radioactive waste disposed	kg	3,30E-02	5,86E-03	1,80E-02	5,68E-02	1,31E-02	ND	ND	3,72E-04	6,85E-04	0,00E+00	4,42E-04	0,00E+00

OUTPUT FLOWS

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	6,11E+00	6,11E+00	0,00E+00	ND	ND	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	7,49E-01	7,49E-01	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

INFORMATION ON BIOGENIC CARBON CONTENT

RESULTS PER DECLARED UNIT

BIOGENIC CARBON CONTENT	UNIT	QUANTITY
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in packaging	kg C	41,8

NOTA: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025
and EN 15804:2012+A2:2019 for:

ObsidianaCOMPAC™

EPD REGISTRATION NUMBER S-P-06530

REVISION DATE 2023.03.25 / VERSION 1.1

PUBLICATION DATE 2022.07.29

VALID UNTIL 2027.07.19

Programme
The International EPD® System
www.environdec.com

Programme operator
EPD International AB

COMPAC

EPD®

ECO PLATFORM EPD VERIFIED

PRODUCT INFORMATION

PRODUCT NAME: ObsidianaCOMPAC™

> Production site:
MARMOL COMPAC S.A.U.
Location: Real de Gandía, Valencia, SPAIN.

Product-related or management system-related certifications
ISO 9001, C2C, LEED, WELL and BREEAM, HPD, NSF, Greenguard & Greenguard Gold.

PRODUCT IDENTIFICATION

- Volcano Cloud
- Volcano Light
- Astral Azabache
- Volcano Dark
- Volcano Grey
- Astral Titaneo
- Volcano Fog
- Volcano Pearl
- Astral Lactea

PRODUCT DESCRIPTION

ObsidianaCOMPAC™

Obsidiana™ COMPAC® is an agglomerated stone made with recycled glass and mirror (>90%), polyester resin and additives. Obsidiana™ COMPAC® has zero Respirable Crystalline Silica (RCS).

With Obsidiana™ COMPAC® we reinvented Surfaces by creating a new category: Sustainable Surfaces. And it's done in true COMPAC® style. Adding beauty to the Zero Waste philosophy. The Zero Waste philosophy is the inspiration of the human being in nature so as not to generate waste. This deep-rooted commitment to sustainability has been ingrained in our DNA since 1975, and, even today, we preserve it as a fundamental pillar that moves the fibers of our company.

Obsidiana™ has the same features as the others and with the level of finish and beauty fitting of COMPAC®.

A material designed so that architects, interior designers and designers can design more sustainable and environmentally friendly kitchens and bathrooms with the same technical performance as other non-recycled materials.

Obsidiana™ Surfaces are manufactured in three specific thickness: 12 mm, 20 mm and 30 mm.

UN CPC CODE
Division 376 "Monumental or building stone and articles thereof".
• Class 3769, Subclass 37690 Other worked monumental or building stone and articles thereof; other artificially colored granules, chippings and powder of natural stone; articles of agglomerated slate.

GEOGRAPHICAL SCOPE
• Production site location: Real de Gandia, Valencia, España.
• Use and end-of-life location: Global.

PRODUCT DESCRIPTION

PROPERTY	UNITS OF MEASURAMENT	RESULTS[1]
Fire reaction UNE-EN-ISO 9239-1:2002 & ISO 1716:2002	Euroclasses	A2fl s1
Coefficient of linear thermal expansion UNE EN 14617-11	$^{O}C^{-1}$	1,2-1,5 x 10^{-5}
Flexural strength UNE EN 14617-2	MPa	40 – 60
Thermal shock resistance UNE EN 14617-6	%	ΔRf,20 = 4 - 13% Δm < -0.02 %
Impact resistance UNE EN 14617-9	J	mín. 2,8 (12 mm) mín. 5,5 (20 mm)
Slip resistance UNE EN 14231:2003	USRV	Polish: 9 wet / 40 dry Matt: 13 wet / 44 dry
Abrasion resistance UNE-EN 14617-4	mm	30 - 33
Water absorption UNE EN 14617-1	%	0,04 – 0,06
Apparent density UNE EN 14617-1	kg/m^3	2250 – 2300
Surface hardness EN101:1991	Mohs	6
Chemical resistance UNE EN 14617-10	C4	**To alkalis:** C4 (Material keeps at least 80% of their resistance reference value after 8 hours). **To acids:** C4 (Material keeps at least 80% of their resistance reference value after 8 hours).

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[1] The values in this table are only typical values and not vinculant. For more information or test reports please contact our quality department.

LIFE CYCLE ANALYSIS

INFORMATION

DECLARED UNIT

Since the final product is marketed in three different thicknesses (12 mm, 20 mm and 30 mm), the declared unit selected for Obsidiana™ Surfaces is:

• 1000 kg of stone surface (1 t).

Additionally, based on the thickness of use, the equivalent results from the LCA study may be applicable to:

• 1 m^2 of surface covered with the product, by thickness.

This document will be used for B2B communication, with a global scope.

REFERENCE SERVICE LIFE

COMPAC® products described are used as finishing materials in construction of buildings. As a complementary reference, the useful life of these buildings is estimated to be greater than 50 years, and it is possible that the use of COMPAC® products equals this range of service, since due to their nature and composition, these materials are of high quality and proven durability.

TIME REPRESENTATIVENESS

The production period included for the analysis was from January 1, 2020 to December 31, 2020.

DATABASE(S) AND LCA SOFTWARE USED

The SimaPro 9.3 software and the ecoinvent 3.8 database have been used for the life cycle analysis with the "cut-off" system model and the "polluter pays" principle, which considers that "the philosophy underlying is that a producer is fully responsible for the disposal of their waste and does not receive any credit for the supply of recyclable materials.

Additionally, the principle of modularity has been applied to assign the waste treatment and disposal processes of the productive activities in the scope of the study.

The assessments methods selected are those corresponding to the EN 15804:2012+A2:2019 standard and compatible with the ecoinvent 3.8 database, including the methods determined for each of the indicators by impact category.

DESCRIPTION OF SYSTEM BOUNDARIES

The selected scope for the life cycle analysis is: Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional module A4).

A
PHASE OF
PRODUCTION /

A1. RAW MATERIALS EXTRACTION

Regarding the types of raw materials, the quantities and descriptions of the different types of materials and their origins have been compiled. In the case of Obsidiana™ products, an average composition has been determined for each of the product models/series and, in turn, based on the production reported for the study period, the most representative average composition model in volume has been defined. and with an equivalent model in the reference database. The extraction and processing of raw materials is included, as well as upstream energy consumption.

A2. TRANSPORTATION OF RAW MATERIALS

The production site has reported the place from where the raw materials are transported and the transport mode used to move the raw materials from the place of origin to the production plant. For each of the raw materials, considering their consumption according to the reported production, a t*km ratio has been determined, which is consolidated by type of transportation used, for the representative model.

A3. PRODUCTION (MANUFACTURING)

The general manufacturing processes within the operational limits of Obsidiana™ production are presented in the following figure and listed below:

1. Reception of the raw material.
2. Quality control.
3. Storage.
4. Mixing with resins and pigments.
5. Mixture distribution.
6. Pressing.
7. Curing (at 90°C).
8. Cutting on racks.
9. Calibrated and polished.
10. Quality control.
11. Table Storage.
12. Cut to size.
13. Transportation.

The main inputs of the manufacturing system are:

• Energy: Electricity and Fuels.

• Water: Well intake or network consumption.

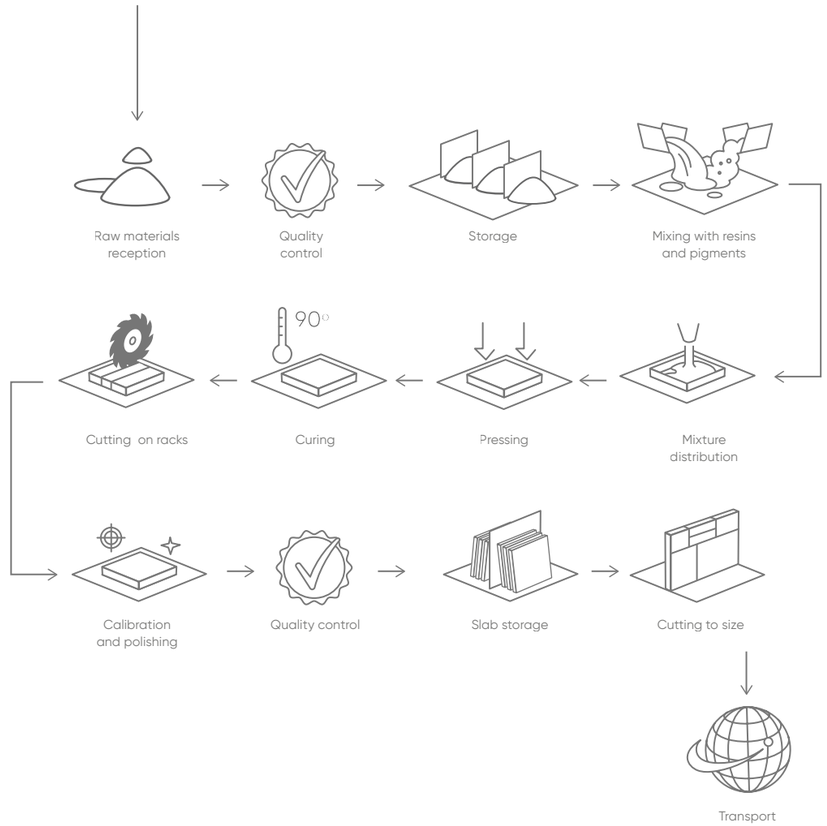
• Consumables: External raw materials, waste to be processed and/or recovered.

The main outputs of the production system are:

• Waste generated: Hazardous, non-hazardous.

• Emissions: Air, water.

PRODUCTION
PROCESS OF
OBSIDIANA



A4. PRODUCT TRANSPORT

Considering the wide distribution of products at an international and regional level, based on the sales distribution report, the total production sold by family and by country of destination is recorded. For each of the destinations, according to information for internal use, the export ports in the country of origin and import ports in the destination countries are determined. An average transportation distance to the construction site is represented by the distance to the main city in each destination country.

For each case, the transport distances are determined and associated with a means of transport: road freight vehicle, sea container ship and road freight vehicle. Based on the distribution of sales by country, the average distance scenario is determined for each means of transport and each of the product families, which is used in the modelling. The detail of the technical parameters for the transport model is obtained from the ecoinvent 3.8 database and its reference technical studies.

A5. INSTALLATION (CONSTRUCTION MODULE)

Considering the diverse and multiple applications by type of product and based on the indications of the design criteria and expert criteria, described in the installation manuals, the representative average scenario selected considers the most extensive use to be 95% as countertops and 5% other applications which include use in floors, walls, or columns.

Since final installation may require additional finishing processes (e.g., cutting, polishing) based on design and selected functional use, there is no specific average scenario to model installation process considering a standard amount of finished product, ancillary materials for installation, power tool usage, and material scrap or loss rates.

The LCA study has excluded this module from the impact analysis estimation.

PRODUCT TRANSPORT MODULE

PARAMETER	VALUE EXPRESSED PER DECLARED UNIT	
Type and fuel consumption of the vehicle, type of vehicles used for the transport; for example, trucks for long distance, boat, etc.	Transport, freight, lorry 16-32 metric t, EURO5 {RER}| transport, freight, lorry 16-32 metric t, EURO5 | Cut-off, U	Transport, freight, sea, container ship {GLO}| transport, freight, sea, container ship | Cut-off, U
Distance	km by truck: 460.27	km by ship: 7852.66
Capacity utilization (including empty return trip)	0,60	0,70
Apparent density	2250 - 2300kg/m^3	2250 - 2300kg/m^3
Useful capacity factor	< 1	< 1

B
PHASE OF
USE

Based on their design features and components, Obsidiana™ COMPAC® products have a service life of at least 50 years. Depending on the installation conditions and multiple applications for final finishing, maintenance needs are limited to cleaning routines (daily or weekly). The company has a manual of recommendations to maintain the quality and finish conditions of the product throughout the useful life of the material. Since no specific scenario is defined as representative for the impact analysis, this module is not declared in the LCA study.

C
PHASE OF
END OF LIFE /

The conceptual approach for planning the end-of-life phase modules is described below.

C1. DEMOLITION.

There are no statistics that demonstrate usual practices of dismantling for reuse or recovery of the material at the end of its lifespan. A generic demolition process is assumed, with the use of heavy equipment, as well as the generation of air emissions during this activity, according to the default process in the ecoinvent 3.8 database.

C2. TRANSPORTATION.

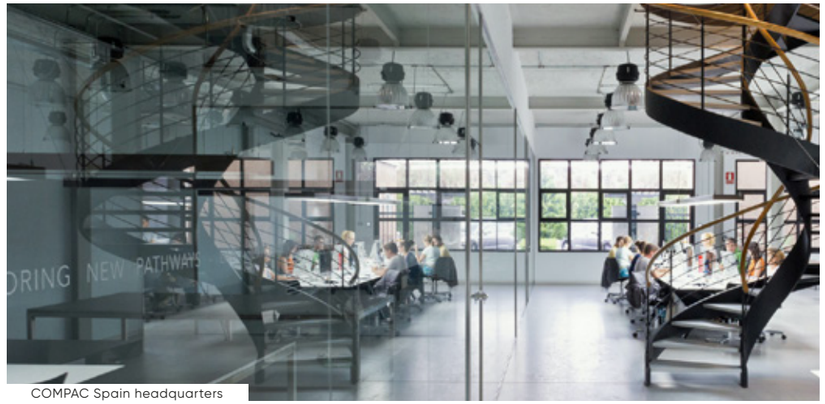
Given the wide distribution of the product in the international market, the transport distances to final disposal sites for inert waste are variable. Considering national and local conditions, an average scenario of 50 km of road transport is assumed using the default processes of the ecoinvent 3.8 database.

C3. WASTE PROCESSING.

Although the material could have a recovery potential for reuse (total or partial) or transformation into recycled aggregates, there is no evidence of widespread practices at a global level for the recovery of the material after the demolition phase for the purpose of recycling the material. product. Commonly, all the material is finally disposed in a sanitary landfill, without any recovery. Therefore, the model assumes the scenario of zero impacts associated with this life cycle module.

C4. FINAL DISPOSAL.

In accordance with common practices in the local market, demolition waste is usually deposited as inert material in a sanitary landfill, without material recovery actions. The final disposal scenario in a sanitary landfill is assumed according to the default processes of the ecoinvent 3.8 database.



COMPAC Spain headquarters

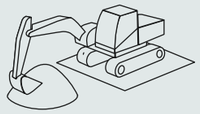
END OF LIFE PHASE MODULE

MÓDULE	PARAMETER	UNIT (PER DECLARED UNIT)	VALUE
C1 DEMOLITION	Process of collection specified by type	Kg collected in a separate	0
		Kg collected mixed with waste from construction	1 kg
C2 TRANSPORT	Type and fuel consumption of the vehicle, type of vehicles used for the transport	Transport, freight, lorry 16-32 metric t, EURO6	Diesel consumption: 0,0366 kg/t*km
	Distance	Km	50
	Use of the capacity (including the return in vacuum)	%	0,60
	Apparent density of transported products	kg/m^3	2250 - 2300
	Useful capacity factor	---	1
C3 WASTE TREATMENT	System recovery specified by type	kg for reuse	0
		kg for recycle	0
		kg for energy recovery	0
C4 DISPOSAL	Disposal specified by type	kg of product for final deposition	1

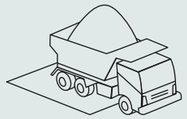
BENEFITS AND LOADS

BEYOND THE SYSTEM BOUNDARIES

In accordance with the forecasts indicated, the model assumes a scenario of total disposal of the demolition waste to a sanitary landfill. There is no information available to assume demolition waste recovery scenarios in the countries covered by the LCA study.

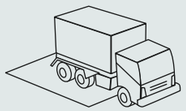


A1 **EXTRACTION OF RAW MATERIALS**
Primary raw materials
Secondary raw materials
Fuels
Energy

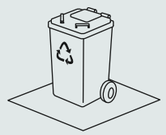


A2 **TRANSPORTATION OF RAW MATERIALS**
Primary raw materials
Secondary raw materials
Consumables

A3 **MANUFACTURING PROCESS**
Primary fuels
Energy
Ancillary materials
Packaging materials
Water
Waste



A4 **FINISHED PRODUCT TRANSPORTATION**
Road transport
Ship transport



C1-C4 **END OF LIFE**
Demolition
Transport
Final disposal

LCA PRACTITIONER.
Eco Intelligent Growth, info@ecointelligentgrowth.net

ASSUMPTIONS:

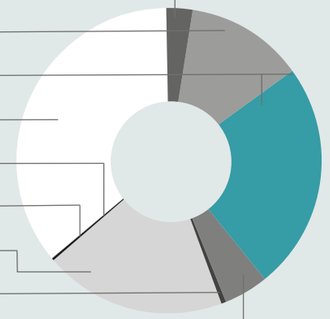
PRODUCTION STAGE

All data is representative of actual production management. Electrical generation mix was modelled based on certificates of guarantee of origin provided by the electricity supplier to the manufacturer and the national electrical annual reports. All energy consumed comes from certified renewable energy.

ENERGY MIX FROM 100 % RENEWABLE ENERGY SUPPLIER

BASED ON SPAIN ENERGY MIX FROM ECOINVENT 3.8.

E, HV {ES} | EP, hydro, pumped storage | Cut-off, U **2,71 %**
E, HV {ES} | EP, hydro, reservoir, non-alpine region | Cut-off, U **32%**
E, HV {ES} | EP, hydro, run-of-river | Cut-off, U **24,24%**
E, HV {ES} | EP, solar thermal parabolic trough, 50 MW | Cut-off, U **35,89%**
E, HV {ES} | EP, solar tower power plant, 20 MW | Cut-off, U **0,01%**
E, HV {ES} | EP, wind, 1-3MW turbine, onshore | Cut-off, U **0,10%**
E, HV {ES} | EP, wind, 1-3MW turbine, onshore | Cut-off, U **19,76%**
E, HV {ES} | EP, wind, >3MW turbine, onshore | Cut-off, U **0,11%**
E, HV {ES} | EP, wind, <1MW turbine, onshore | Cut-off, U **4,70%**



E, HV {ES} | EP = Electricity, high voltage {ES} | Electricity production

A. Total production

Based on the internal records from the production site, the amount of materials produced per year, by type of product, was accounted and reported for the year of study. Raw materials losses were accounted in the analysis.

B. Electricity consumption

The total electrical energy consumed in its operations has been reported. The facilities operation in Spain produces Terrazzo™ and Obsidiana™ Surfaces, with all energy consumption directly attributable to the total production of these construction materials.

C. Fuel consumption

The production site has reported the total fuel consumed in its operations. Fuel consumption includes diesel (L/year), gas (Nm^3/year), butane gas (L/kg), propane gas (kg), LPG (kg), and K120 (kg). Once the consumption ratio per kg of production has been calculated, the conversions have been applied (based on the density and caloric value of each fuel) to obtain the equivalence in energy units (MJ) for the modelling of the process..

D. Water consumption

The production site has reported the volume of water consumption by type of supply source (public or private network water). The annual consolidated consumption in the industrial process is obtained, accounting the benefits from the recirculation system. Recorded consumption is assigned to the material production process. The specific consumption per ton of product is calculated in m^3/kg and its equivalence in L/kg.

E. Waste generation

Through the annual report from the production site, municipal solid waste, non-hazardous recyclable waste, recyclable hazardous waste and hazardous waste to be disposed of are identified and accounted for. For each type of waste, the generation ratio is calculated with respect to the total production of the production site. For materials sent to recycling facilities, a transport distance of 50 kilometres to the treatment provider has been assumed, but no treatment specific burdens were considered, following the modularity and polluter pays principle.

F. Consumption of packaging materials

Through the annual report from the production site, the packaging materials used for the dispatch and marketing of products in their different presentations are identified and accounted for. For each of these, the product ratio (cardboard and pallet) per declared unit has been determined, selecting the most critical scenario, under conservative criteria for modelling. Additionally, the company has identified the use of other materials such as strapping, rachet, wood, inflatable bags, plastic corners, and crossbar slabs that are used in container exports, however, the analysis of the available inventory data does not allow the reliable estimation of quantities for these materials, which are then excluded from the LCA.

Fleet of electric cars in COMPAC Spain

CUT-OFF RULES.

In general, the cut-off criteria are 1% of the consumption of renewable and non-renewable primary energy and 1% of the total input mass of the manufacturing process (according to the UNE-EN 15804 standard). In the evaluation, all available data of the production process is considered, i.e., all raw materials used, ancillary materials used and energy consumption using the best available data sets in the reference database. The following processes have been excluded:

• Manufacture of equipment used in production, infrastructure, or any other capital goods.

• Packaging materials for products dispatched in container: strapping, rachet, wood, inflatable bags, plastic corners, and crossbar slabs.

• Transportation of personnel to the plant or from the production site.

• Long-term emissions.

DATA QUALITY.

All primary data used for the environmental impact estimation was obtained from production data registered by the manufacturer at the reported production site for the year of assessment. All secondary data was selected from ecoinvent 3.8 database considering most important parameters regarding geographical, technological, and temporary representativeness.

ALLOCATION.

All primary data used in the LCA is directly related to Obsidiana™ Surfaces production, no allocation criteria were required for the data analysis of production information (e.g., raw materials used).

In the case of the production of Obsidiana™ and Terrazzo™, both processes are carried out in the same production facilities, so the inputs and outputs of general processes for the entire production were assigned based on the weighting with respect to the production of each material in the site (by mass).

The waste management data corresponds to all the waste generated in the facilities of the production plant, since there are no methodologies to segregate the data by processes or activities of the organization. Therefore, the reported data may include waste generated in other operational and administrative processes, which does not generate significative contributions to the environmental impacts assessed.

Consequently, distribution and product end-of-life scenarios were created for the declared unit (by mass). The modularity principle has been followed, as well as the polluter pays principle.

ENVIRONMENTAL ASSESSMENT METHODS.

The indicators and impact categories used for the environmental assessment, as well as the assessment methods were those indicated in standard EN 15804+A2 and the program operator PCR.

MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION.

STAGES →	PRODUCT			BUILDING PROCESS		USE STAGE							END OF LIFE				RESOURCE RECOVERY
	RAW MATERIAL SUPPLY	TRANSPORT	MANUFACTURING	TRANSPORT	CONSTRUCTION INSTALLATION	USE	MAINTENANCE	REPAIR	REPLACEMENT	REFURBISHMENT	OPERATIONAL ENERGY USE	OPERATIONAL WATER USE	DE-CONSTRUCTION DEMOLITION	TRANSPORT	WASTE PROCESSING	DISPOSAL	REUSE-RECOVERY-RECYCLING-POTENTIAL
MODULE	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
MODULES DECLARED	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
GEOGRAPHY	ES	ES	ES	GLO	–	–	–	–	–	–	–	–	GLO	GLO	GLO	GLO	GLO
SPECIFIC DATA USED	> 90% GWP			–	–	–	–	–	–	–	–	–	–	–	–	–	–
VARIATION – PRODUCTS	(-19,15%) – (0,14%)			–	–	–	–	–	–	–	–	–	–	–	–	–	–
VARIATION – SITES	NR. One production site			–	–	–	–	–	–	–	–	–	–	–	–	–	–

X: included / ND: not declared / NR: not relevant / ES: Spain / GLO: Global.

CONTENT INFORMATION

Obsidiana™ COMPAC® Surfaces can have a variable composition range. The composition range of the product is shown below. For its representation in the calculation model, an average product has been represented at the composition level, based on the contribution to the environmental impact of the different raw materials.

The determination of the average composition has been carried out through a sensitivity analysis to see which raw materials have a higher impact within the composition of the product, varying the potential composition of those raw materials that have a greater contribution to the environmental impact of the product. The average composition is represented by the scenario considering the lowest and highest environmental impact for the consumption of raw materials.

DECLARATION OF DANGEROUS SUBSTANCES.

The declared products contain less than 0,1% or no dangerous substances, from the list of "Candidate list of Substances of Very High Concern". All products made of materials declared here comply with the REACH Regulation (CE) number 1907/2006, regarding the registration, evaluation, authorization and restriction of chemical substances.

Reforested pines at COMPAC Portugal

CONTENT INFORMATION

PRODUCT COMPONENTS	WEIGHT / KG	POST-CONSUMER MATERIAL, WEIGHT-%	RENEWABLE MATERIAL, WEIGHT-%
RECYCLED GLASS AND MIRROR	>0,90	100 %	0,00 %
POLYESTER RESIN	<0,10	0,00 %	0,00 %
ADDITIVES	0,01	0,00 %	0,00 %
TOTAL	**1,00**	**>90,0 %**	**0,00 %**

PACKAGING MATERIALS	WEIGHT / KG	WEIGHT - % / VERSUS THE PRODUCT
CARDBOARD BOX	0,04	4,10 %
WOOD PALLET	0,02	1,85 %
TOTAL	**0,06**	**5,95 %**

ENVIRONMENTAL INFORMATION

All data results are representative for 1000 kg of Obsidiana™ COMPAC® Surfaces, as declared unit. Estimated impact results are only relative statements that do not indicate impact category endpoints, exceeding threshold values, safety margins, or risks. The declared product is an average that is not available for purchase on the market.

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	6,66E+02	2,94E+01	2,59E+02	9,54E+02	1,33E+02	ND	ND	3,76E+00	6,75E+00	0,00E+00	5,35E+00	0,00E+00
GWP-fossil	kg CO_2 eq.	6,54E+02	2,94E+01	2,87E+02	9,70E+02	1,33E+02	ND	ND	3,76E+00	6,74E+00	0,00E+00	5,27E+00	0,00E+00
GWP-biogenic	kg CO_2 eq.	1,18E+01	9,66E-03	-2,99E+01	-1,81E+01	3,83E-02	ND	ND	1,11E-03	2,22E-03	0,00E+00	7,97E-02	0,00E+00
GWP-luluc	kg CO_2 eq.	3,74E-01	2,38E-04	1,50E+00	1,87E+00	1,63E-03	ND	ND	9,27E-05	5,46E-05	0,00E+00	1,91E-03	0,00E+00
ODP	kg CFC 11 eq.	7,17E-05	6,99E-06	3,39E-05	1,13E-04	2,95E-05	ND	ND	8,41E-07	1,60E-06	0,00E+00	9,36E-07	0,00E+00
AP	mol H+ equiv.	4,06E+00	5,85E-02	1,70E+00	5,82E+00	2,60E+00	ND	ND	4,05E-02	1,34E-02	0,00E+00	4,91E-02	0,00E+00
EP-freshwater	kg PO_4^{3-} eq.	4,28E-02	4,62E-05	2,41E-02	6,69E-02	2,19E-04	ND	ND	8,12E-06	1,06E-05	0,00E+00	1,94E-04	0,00E+00
EP-agua freshwater	kg P eq.	1,39E-02	1,51E-05	7,86E-03	2,18E-02	7,14E-05	ND	ND	2,65E-06	3,46E-06	0,00E+00	6,33E-05	0,00E+00
EP-marine	kg N eq.	4,31E-01	9,70E-03	2,78E-01	7,19E-01	6,55E-01	ND	ND	1,82E-02	2,23E-03	0,00E+00	2,03E-02	0,00E+00
EP-terrestrial	mol N eq.	4,52E+00	1,08E-01	2,44E+00	7,07E+00	7,28E+00	ND	ND	1,99E-01	2,48E-02	0,00E+00	2,23E-01	0,00E+00
POCP	kg NMVOC eq.	1,96E+00	3,81E-02	9,02E-01	2,90E+00	1,87E+00	ND	ND	5,45E-02	8,73E-03	0,00E+00	6,16E-02	0,00E+00
ADP-minerals y metals*	kg Sb eq.	1,67E-03	1,28E-06	6,03E-04	2,27E-03	3,52E-06	ND	ND	1,94E-07	2,93E-07	0,00E+00	2,40E-07	0,00E+00
ADP-fossil*	MJ	1,07E+04	4,17E+02	4,63E+03	1,58E+04	1,79E+03	ND	ND	5,20E+01	9,57E+01	0,00E+00	7,01E+01	0,00E+00
WDP*	m3	5,45E+02	-6,98E-02	2,66E+02	8,10E+02	-3,11E-01	ND	ND	1,34E-02	-1,60E-02	0,00E+00	1,75E-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.

POTENTIAL ENVIRONMENTAL IMPACT
ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	6.22E+02	2.92E+01	2.84E+02	9.35E+02	1.32E+02	ND	ND	3,72E+00	6,70E+00	0,00E+00	5,20E+00	0,00E+00

[2] **THE INDICATOR** includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Reforested pines, factory COMPAC Portugal in the background

USE OF RESOURCES

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	5,76E+02	6,39E-01	8,72E+02	1,45E+03	2,57E+00	ND	ND	8,39E-02	1,47E-01	0,00E+00	1,65E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	8,27E+02	8,27E+02	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,76E+02	6,39E-01	1,70E+03	2,28E+03	2,57E+00	ND	ND	8,39E-02	1,47E-01	0,00E+00	1,65E+00	0,00E+00
PENRE	MJ	9,72E+03	4,43E+02	4,97E+03	1,51E+04	1,90E+03	ND	ND	5,52E+01	1,02E+02	0,00E+00	7,45E+01	0,00E+00
PENRM	MJ	1,80E+03	0,00E+00	7,56E+00	1,81E+03	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,15E+04	4,43E+02	4,98E+03	1,69E+04	1,90E+03	ND	ND	5,52E+01	1,02E+02	0,00E+00	7,45E+01	0,00E+00
SM	kg	8,54E+02	0,00E+00	0,00E+00	8,54E+02	0,00E+00	ND	ND	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	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,36E+01	1,14E-03	6,15E+00	1,97E+01	5,92E-03	ND	ND	8,78E-04	2,63E-04	0,00E+00	8,42E-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 PRODUCTION

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5,17E-03	1,10E-03	3,09E-03	9,35E-03	2,90E-03	ND	ND	1,36E-04	2,52E-04	0,00E+00	1,50E-04	0,00E+00
Non-hazardous waste disposed	kg	1,07E+02	1,72E-02	1,99E+02	3,06E+02	7,92E-02	ND	ND	3,20E-03	3,95E-03	0,00E+00	1,00E+03	0,00E+00
Radioactive waste disposed	kg	1,57E-02	2,98E-03	9,25E-03	2,79E-02	1,29E-02	ND	ND	3,72E-04	6,85E-04	0,00E+00	4,42E-04	0,00E+00

OUTPUT FLOWS

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	1,85E+00	1,85E+00	0,00E+00	ND	ND	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	6,55E-01	6,55E-01	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

INFORMATION ON BIOGENIC CARBON CONTENT

RESULTS PER DECLARED UNIT

BIOGENIC CARBON CONTENT	UNIT	QUANTITY
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in packaging	kg C	29,0

NOTA: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Raw material silos at COMPAC Spain

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025
and EN 15804:2012+A2:2019 for:

TerrazzoCOMPAC™

Programme
The International EPD® System
www.environdec.com

Programme operator
EPD International AB

COMPAC

EPD REGISTRATION NUMBER S-P-06529

REVISION DATE 2023.03.25 / VERSION 1.1

PUBLICATION DATE 2022.07.29

VALID UNTIL 2027.07.19

EPD®

ECO PLATFORM EPD VERIFIED

PRODUCT INFORMATION

PRODUCT NAME: TerrazzoCOMPAC™

> Production site:
MARMOL COMPAC S.A.U.
Location: Real de Gandía, Valencia, SPAIN.

Product-related or management system-related certifications
ISO 9001, C2C, LEED, WELL and BREEAM, Greenguard & Greenguard Gold.

PRODUCT IDENTIFICATION

- Afion
- Albufera
- Aluminum
- Anthracite
- Basalt
- Beige Dune
- Beige Faraya
- Bering
- Blanco Lhasa
- Blanco Micro
- Blanco Stone
- Blanco Stone
- Caramelo
- Classic Black
- Classic Dark Brown
- Classic Dark Grey
- Classic New Beige
- Classic New Brown
- Classic New Grey
- Classic New White
- Crema Altea
- Crema Madani
- Crema Valencia
- Dakar
- Eneus
- Hermon
- HPS Petra Grey Chip
- HPS Petra Grey Stone
- HPS Petra Grey
- HPS Petra White Chip
- Jura
- La Perla
- Marfil Stone
- Micro Thassos
- Nacarado
- Nilo
- Nubia Fog
- Palladium
- Petra Grey Chip
- Petra Grey Stone
- Petra Grey
- Petra White Black Chip
- Petra White Chip
- Petra White
- Sirocco
- Sunset
- Travertine
- White Faraya
- White Ibiza
- White Teide

PRODUCT DESCRIPTION

TerrazzoCOMPAC™

Terrazzo™ COMPAC® is an advanced product made up of natural marble (>90%) to which resins and other binding products are added to, through advanced technology called engineered stone based on vacuum vibrocompression, achieving a product that improves the natural stone, maintaining its essence and substantially improving its functional properties and decorative possibilities.

Terrazzo™ COMPAC® is a high-quality product capable of exceeding the highest technical and functional demands of both professionals and end users. The material that reinvents itself to offer a wide versatility of applications that provides a solution to all Surfaces, including outdoor, countertops and bathroom partitions. Repaired and repolishable in a simple way.

It is also a product recognized with the Greenguard Indoor Air Quality seals that certify its contribution to creating healthy indoor environments by not producing volatile emissions and the Greenguard Children & Schools that guarantees its use in schools or other buildings where children spend long periods of time.

Terrazzo™ COMPAC® Surfaces are manufactured in three specific thickness: 12 mm, 20 mm and 30 mm. It can be manufactured in different thicknesses on request.

The intense exploitation of the quarries and the large amount of unusable waste caused by their extraction are the origin of the search for an advanced product capable of expressing the new and innovative aesthetic and functional ideas of modern architecture and being respectful of the environment.

Due to its special characteristics and durability, Terrazzo™ COMPAC® is suitable for use as an advanced alternative to natural stone or other construction materials in a large number of applications:

• On high-traffic surfaces (airports, stations, shopping malls, public buildings...) where its homogeneity, resistance, ease of maintenance and decorative possibilities find the right place to demonstrate its qualities.

• It is a high-performance product for both indoor and outdoor use (including outdoor kitchens), as it maintains its qualities even in extreme weather conditions.

• Its versatility and ease of handling make it the ideal product to apply and combine on steps, chimney trims, doors and windows, column coverings, furniture tops and many other applications that allow the development of decorative projects with no limits other than the imagination.

• Due to its high decorative capacity and practically zero porosity, it is highly recommended for use in the home, especially in bathrooms, both as flooring, wall cladding or countertops.

UN CPC CODE
Division 376 "Monumental or building stone and articles thereof".
• Class 3761, Subclass 37610 Marble, travertine and alabaster, worked, and articles thereof (except setts, curbstones, flagstones, tiles, cubes and similar articles); artificially coloured granules, chippings and powder of marble, travertine and alabaster.

GEOGRAPHICAL SCOPE
• Production site location: Real de Gandia, Valencia, Spain.
• Use and end-of-life location: Global

PRODUCT DESCRIPTION

PROPERTY	UNITS OF MEASUREMENT	RESULTS[1]
Fire reaction UNE-EN 13501-1	Euroclasses	A2fl s1
Thermal expansion coefficient UNE EN 14617-11	$^{O}C^{-1}$	0,8 – 1,1 x 10^{-5}
Flexural resistance UNE EN 14617-2	MPa	15-39
Surface hardness UNE EN 101:1991	Mohs	3-4
Impact resistance UNE EN 14617-9	J	2,5-7
Slip resistance UNE EN 14231:2003	USRV	Polish: 5 wet / 50 dry Glacé: 16 wet / 48 dry Bush hammered: 80 wet / 86 dry
DIN 51097	Class	Lineal, Sierra, Dune: Class C
Abrasion resistance UNE-EN 14617-4	mm	33,5 - 38,5
Water absorption UNE EN 14617-1	%	0,04 – 0,06
Apparent density UNE EN 14617-1	kg/m^3	2370 – 2578
Chemical resistance UNE EN 14617-10	–	**To alkalis:** C4 (Material keeps at least 80% of their resistance reference value after 8 hours of basis attack). **To acids:** C4 (Material keeps at least 60% of their resistance reference value after 8 hours of basis attack).

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[1] The values in this table are only typical values and not vinculant. For more information or test reports please contact our quality department.

LIFE CYCLE ANALYSIS

INFORMATION

DECLARED UNIT

Since the final product is marketed in three different thicknesses (12 mm, 20 mm and 30 mm) and for various uses (tiles, skirtings and slabs), the declared unit selected for Terrazzo™ Surfaces is:

• 1000 kg of stone surface (1 t).

Additionally, based on the thickness of use, the equivalent results from the LCA study may be applicable to:

• 1 m^2 of surface covered with the product, by thickness.

This document will be used for B2B communication, with a global scope.

REFERENCE SERVICE LIFE

COMPAC® products described are used as finishing materials in construction of buildings. As a complementary reference, the useful life of these buildings is estimated to be greater than 50 years, and it is possible that the use of COMPAC® products equals this range of service, since due to their nature and composition, these materials are of high quality and proven durability.

TIME REPRESENTATIVENESS

The production period included for the analysis was from January 1, 2020 to December 31, 2020.

DATABASE(S) AND LCA SOFTWARE USED

The SimaPro 9.3 software and the ecoinvent 3.8 database have been used for the life cycle analysis with the "cut-off" system model and the "polluter pays" principle, which considers that "the philosophy underlying is that a producer is fully responsible for the disposal of their waste and does not receive any credit for the supply of recyclable materials.

Additionally, the principle of modularity has been applied to assign the waste treatment and disposal processes of the productive activities in the scope of the study.

The assessments methods selected are those corresponding to the EN 15804:2012+A2:2019 standard and compatible with the ecoinvent 3.8 database, including the methods determined for each of the indicators by impact category.

DESCRIPTION OF SYSTEM BOUNDARIES

The selected scope for the life cycle analysis is: Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional module A4).

A
PHASE OF
PRODUCTION

A1. RAW MATERIALS EXTRACTION

Regarding the types of raw materials, the quantities and descriptions of the different types of materials and their origins have been compiled. In the case of Terrazzo™ products, an average composition has been determined for each of the product models/series and, in turn, based on the production reported for the study period, the most representative average composition model in volume has been defined. and with an equivalent model in the reference database. Secondary raw materials from recycled glass have been accounted for, also. The extraction and processing of raw materials is included, as well as upstream energy consumption.

A2. TRANSPORTATION OF RAW MATERIALS

The production site has reported the place from where the raw materials are transported and the transport mode used to move the raw materials from the place of origin to the production plant. For each of the raw materials, considering their consumption according to the reported production, a t*km ratio has been determined, which is consolidated by type of transportation used, for the representative model.

A3. PRODUCTION (MANUFACTURING)

The general manufacturing processes within the operational limits of Terrazzo™ production are presented in the following figure and listed below:

1. Reception of the raw material.
2. Quality control.
3. Storage.
4. Mixing with resins and pigments.
5. Mixture distribution.
6. Pressing.
7. Curing.
8. Cutting on racks.
9. Calibrated and polished.
10. Quality control.
11. Table Storage.
12. Cut to size.
13. Transportation.

The main inputs of the manufacturing system are:

• Energy: Electricity and Fuels.

• Water: Well intake or network consumption.

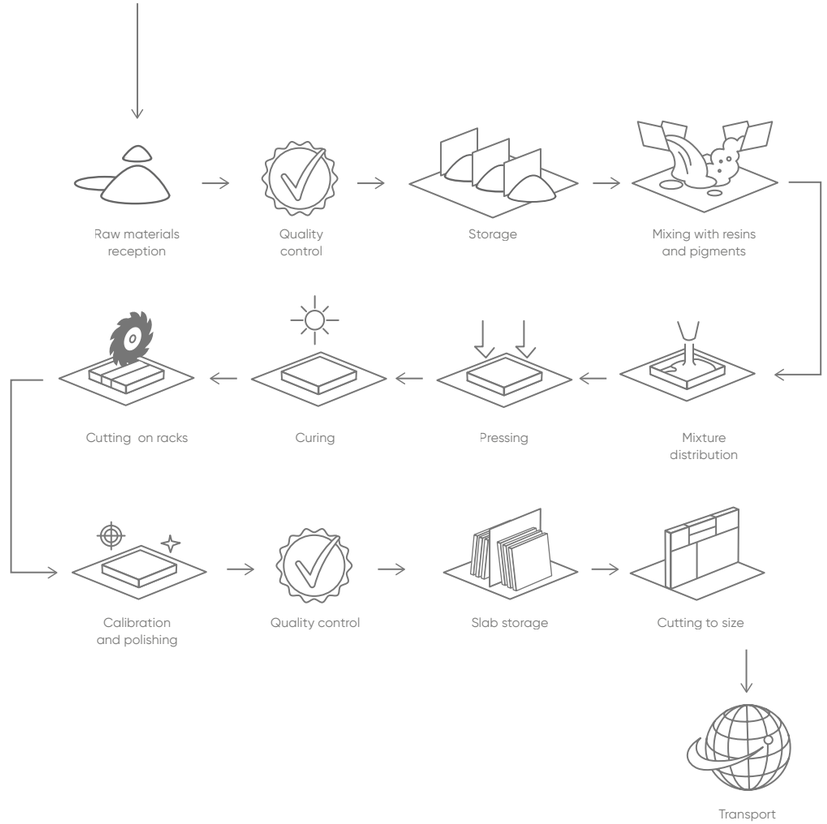
• Consumables: External raw materials, waste to be processed and/or recovered.

The main outputs of the production system are:

• Waste generated: Hazardous, non-hazardous.

• Emissions: Air, water.

PRODUCTION
PROCESS OF
TERRAZZO



A4. PRODUCT TRANSPORT

Considering the wide distribution of products at an international and regional level, based on the sales distribution report, the total production sold by family and by country of destination is recorded. For each of the destinations, according to information for internal use, the export ports in the country of origin and import ports in the destination countries are determined. An average transportation distance to the construction site is represented by the distance to the main city in each destination country.

For each case, the transport distances are determined and associated with a means of transport: road freight vehicle, sea container ship and road freight vehicle. Based on the distribution of sales by country, the average distance scenario is determined for each means of transport and each of the product families, which is used in the modelling. The detail of the technical parameters for the transport model is obtained from the ecoinvent 3.8 database and its reference technical studies.

A5. INSTALLATION (CONSTRUCTION MODULE)

Considering the diverse and multiple applications by type of product and based on the indications of the design criteria and expert criteria, described in the installation manuals, the representative average scenario selected considers the most extensive use to be 80% pavement and 20% walls or facades as the most common product applications. Other applications include use in bathroom backsplash, shower trays, decorative fireplaces and vanity tops.

Since final installation may require additional finishing processes (e.g., cutting) based on design and selected functional use, there is no specific average scenario to model installation process considering a standard amount of finished product, ancillary materials for installation, power tool usage, and material scrap or loss rates.

The LCA study has excluded this module from the impact analysis estimation.

PRODUCT TRANSPORT MODULE

PARAMETER	VALUE EXPRESSED PER DECLARED UNIT	
Type and fuel consumption of the vehicle, type of vehicles used for the transport; for example, trucks for long distance, boat, etc.	Transport, freight, lorry 16-32 metric t, EURO5 {RER}| transport, freight, lorry 16-32 metric t, EURO6 | Cut-off, U	Transport, freight, sea, container ship {GLO}| transport, freight, sea, container ship | Cut-off, U
Distance	km by truck: 24,69	km by ship: 7852,66
Capacity utilization (including empty return trip)	0,60	0,70
Apparent density	2370 - 2580kg/m^3	2370 - 2580kg/m^3
Useful capacity factor	< 1	< 1

B
PHASE OF
USE

Based on their design features and components, Terrazzo™ COMPAC® products have a service life of at least 50 years. Depending on the installation conditions and multiple applications for final finishing, maintenance needs are limited to cleaning routines (daily or weekly). The company has a manual of recommendations to maintain the quality and finish conditions of the product throughout the useful life of the material. Since no specific scenario is defined as representative for the impact analysis, this module is not declared in the LCA study.

Booth COMPAC at KBIS fair, USA

C
PHASE OF
END OF LIFE /

The conceptual approach for planning the end-of-life phase modules is described below.

C1. DEMOLITION.

There are no statistics that demonstrate usual practices of dismantling for reuse or recovery of the material at the end of its lifespan. A generic demolition process is assumed, with the use of heavy equipment, as well as the generation of air emissions during this activity, according to the default process in the ecoinvent 3.8 database.

C2. TRANSPORTATION.

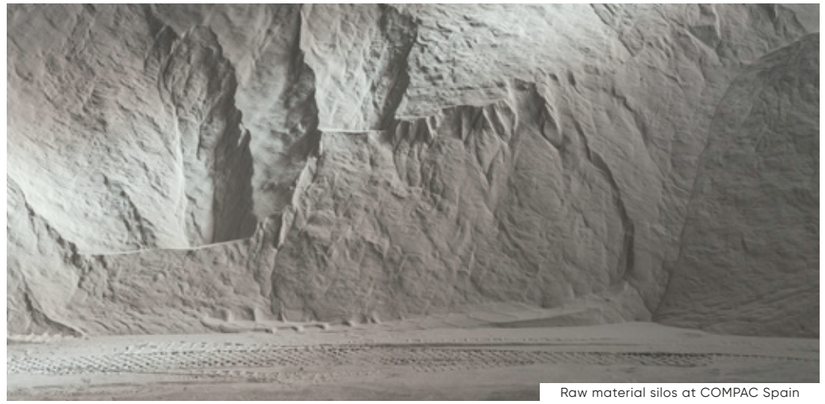
Given the wide distribution of the product in the international market, the transport distances to final disposal sites for inert waste are variable. Considering national and local conditions, an average scenario of 50 km of road transport is assumed using the default processes of the ecoinvent 3.8 database.

C3. WASTE PROCESSING.

Although the material could have a recovery potential for reuse (total or partial) or transformation into recycled aggregates, there is no evidence of widespread practices at a global level for the recovery of the material after the demolition phase for the purpose of recycling the material. product. Commonly, all the material is finally disposed in a sanitary landfill, without any recovery. Therefore, the model assumes the scenario of zero impacts associated with this life cycle module.

C4. FINAL DISPOSAL.

In accordance with common practices in the local market, demolition waste is usually deposited as inert material in a sanitary landfill, without material recovery actions. The final disposal scenario in a sanitary landfill is assumed according to the default processes of the ecoinvent 3.8 database.



Raw material silos at COMPAC Spain

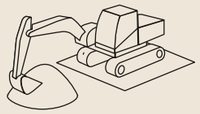
END OF LIFE PHASE MODULE

MÓDULE	PARAMETER	UNIT (PER DECLARED UNIT)	VALUE
C1 DEMOLITION	Process of collection specified by type	Kg collected in a separate	0
		Kg collected mixed with waste from construction	1
C2 TRANSPORT	Type and fuel consumption of the vehicle, type of vehicles used for the transport	Transport, freight, lorry 16-32 metric t, EURO6	Diesel consumption: 0,0366 kg/t*km
	Distance	Km	50
	Use of the capacity (including the return in vacuum)	%	0,60
	Apparent density of transported products	kg/m^3	2370 - 2580
	Useful capacity factor	---	1
C3 WASTE TREATMENT	System recovery specified by type	kg for reuse	0
		kg for recycle	0
		kg for energy recovery	0
C4 DISPOSAL	Disposal specified by type	kg of product for final deposition	1

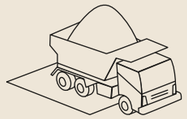
BENEFITS AND LOADS

BEYOND THE SYSTEM BOUNDARIES

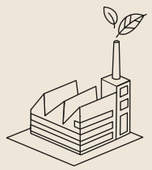
In accordance with the forecasts indicated, the model assumes a scenario of total disposal of the demolition waste to a sanitary landfill. There is no information available to assume demolition waste recovery scenarios in the countries covered by the LCA study.



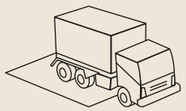
A1 **EXTRACTION OF RAW MATERIALS**
Primary raw materials
Secondary raw materials
Fuels
Energy



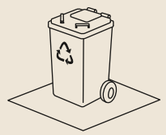
A2 **TRANSPORTATION OF RAW MATERIALS**
Primary raw materials
Secondary raw materials
Consumables



A3 **MANUFACTURING PROCESS**
Primary fuels
Energy
Ancillary materials
Packaging materials
Water
Waste



A4 **FINISHED PRODUCT TRANSPORTATION**
Road transport
Ship transport



C1-C4 **END OF LIFE**
Demolition
Transport
Final disposal

LCA PRACTITIONER.
Eco Intelligent Growth, info@ecointelligentgrowth.net

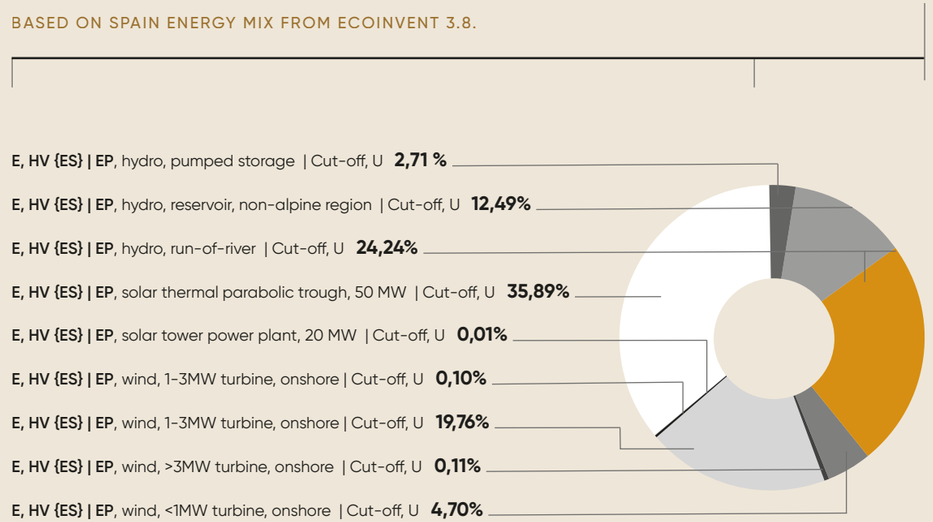
ASSUMPTIONS:

PRODUCTION STAGE

All data is representative of actual production management. Electrical generation mix was modelled based on certificates of guarantee of origin provided by the electricity supplier to the manufacturer and the national electrical annual reports. All energy consumed comes from certified renewable energy.

ENERGY MIX FROM 100 % RENEWABLE ENERGY SUPPLIER

BASED ON SPAIN ENERGY MIX FROM ECOINVENT 3.8.



E, HV {ES} | EP = Electricity, high voltage {ES} | Electricity production

A. Total production

Based on the internal records from the production site, the amount of materials produced per year, by type of product, was accounted and reported for the year of study. Raw materials losses were accounted in the analysis.

B. Electricity consumption

The total electrical energy consumed in its operations has been reported. The facilities operation in Spain produces Terrazzo™ and Obsidiana™ Surfaces, with all energy consumption directly attributable to the total production of these construction materials.

C. Fuel consumption

The production site has reported the total fuel consumed in its operations. Fuel consumption includes diesel (L/year), gasoline (L/year), fuel oil (kg/year), gas (Nm^3/year), butane gas (L/kg), propane gas (kg), LPG (kg), and K120 (kg). Once the consumption ratio per kg of production has been calculated, the conversions have been applied (based on the density and caloric value of each fuel) to obtain the equivalence in energy units (MJ) for the modelling of the process.

D. Water consumption

The production site has reported the volume of water consumption by type of supply source (public or private network water). The annual consolidated consumption in the industrial process is obtained, accounting the benefits from the recirculation system. Recorded consumption is assigned to the material production process. The specific consumption per ton of product is calculated in m^3/kg and its equivalence in L/kg.

E. Waste generation

Through the annual report from the production site, municipal solid waste, non-hazardous recyclable waste, recyclable hazardous waste and hazardous waste to be disposed of are identified and accounted for. For each type of waste, the generation ratio is calculated with respect to the total production of the production site. For materials sent to recycling facilities, a transport distance of 50 kilometres to the treatment provider has been assumed, but no treatment specific burdens were considered, following the modularity and polluter pays principle.

F. Consumption of packaging materials

Through the annual report from the production site, the packaging materials used for the dispatch and marketing of products in their different presentations are identified and accounted for. For each of these, the product ratio (cardboard and pallet) per declared unit has been determined, selecting the most critical scenario, under conservative criteria for modelling. Additionally, the company has identified the use of other materials such as strapping, rachet, wood, inflatable bags, plastic corners, and crossbar slabs that are used in container exports, however, the analysis of the available inventory data does not allow the reliable estimation of quantities for these materials, which are then excluded from the LCA.

COMPAC Spain factory/warehouse

CUT-OFF RULES.

In general, the cut-off criteria are 1% of the consumption of renewable and non-renewable primary energy and 1% of the total input mass of the manufacturing process (according to the UNE-EN 15804 standard). In the evaluation, all available data of the production process is considered, i.e., all raw materials used, ancillary materials used and energy consumption using the best available data sets in the reference database. The following processes have been excluded:

• Manufacture of equipment used in production, infrastructure, or any other capital goods.

• Packaging materials for products dispatched in container: strapping, rachet, wood, inflatable bags, plastic corners, and crossbar slabs.

• Transportation of personnel to the plant or from the production site.

• Long-term emissions.

DATA QUALITY.

All primary data used for the environmental impact estimation was obtained from production data registered by the manufacturer at the reported production site for the year of assessment. All secondary data was selected from ecoinvent 3.8 database considering most important parameters regarding geographical, technological, and temporary representativeness.

ALLOCATION.

All primary data used in the LCA is directly related to Terrazzo™ Surfaces production, no allocation criteria were required for the data analysis of production information (e.g., raw materials used).

In the case of the production of Obsidiana™ and Terrazzo™, both processes are carried out in the same production facilities, so the inputs and outputs of general processes for the entire production were assigned based on the weighting with respect to the production of each material in the site (by mass).

The waste management data corresponds to all the waste generated in the facilities of the production plant, since there are no methodologies to segregate the data by processes or activities of the organization. Therefore, the reported data may include waste generated in other operational and administrative processes, which does not generate significative contributions to the environmental impacts assessed.

Consequently, distribution and product end-of-life scenarios were created for the declared unit (by mass). The modularity principle has been followed, as well as the polluter pays principle.

ENVIRONMENTAL ASSESSMENT METHODS.

The indicators and impact categories used for the environmental assessment, as well as the assessment methods were those indicated in standard EN 15804+A2 and the program operator PCR..

MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION.

STAGES →	PRODUCT			BUILDING PROCESS		USE STAGE							END OF LIFE				RESOURCE RECOVERY
	RAW MATERIAL SUPPLY	TRANSPORT	MANUFACTURING	TRANSPORT	CONSTRUCTION INSTALLATION	USE	MAINTENANCE	REPAIR	REPLACEMENT	REFURBISHMENT	OPERATIONAL ENERGY USE	OPERATIONAL WATER USE	DE-CONSTRUCTION DEMOLITION	TRANSPORT	WASTE PROCESSING	DISPOSAL	REUSE-RECOVERY-RECYCLING-POTENTIAL
MODULE	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
MODULES DECLARED	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
GEOGRAPHY	ES	ES	ES	GLO	–	–	–	–	–	–	–	–	GLO	GLO	GLO	GLO	GLO
SPECIFIC DATA USED	> 90% GWP			–	–	–	–	–	–	–	–	–	–	–	–	–	–
VARIATION – PRODUCTS	(-54,00%) – (18,83%)			–	–	–	–	–	–	–	–	–	–	–	–	–	–
VARIATION – SITES	NR. One production site			–	–	–	–	–	–	–	–	–	–	–	–	–	–

X: included / ND: not declared / NR: not relevant / ES: Spain / GLO: Global.

CONTENT INFORMATION

Terrazo™ COMPAC® Surfaces can have a variable composition range. The composition range of the product is shown below. For its representation in the calculation model, an average product has been represented at the composition level, based on the contribution to the environmental impact of the different raw materials.

The determination of the average composition has been carried out through a sensitivity analysis to see which raw materials have a higher impact within the composition of the product, varying the potential composition of those raw materials that have a greater contribution to the environmental impact of the product. The average composition is represented by the scenario considering the lowest and highest environmental impact for the consumption of raw materials.

DECLARATION OF DANGEROUS SUBSTANCES.

The declared products contain less than 0,1% or no dangerous substances, from the list of "Candidate list of Substances of Very High Concern". All products made of materials declared here comply with the REACH Regulation (CE) number 1907/2006, regarding the registration, evaluation, authorization and restriction of chemical substances.

Staircase in COMPAC Spain offices

CONTENT INFORMATION

PRODUCT COMPONENTS	WEIGHT / KG	POST-CONSUMER MATERIAL, WEIGHT-%	RENEWABLE MATERIAL, WEIGHT-%
MARBLE AND OTHER MINERAL MATERIALS	0,91 – 0,95	0,00 % 0	0,00 %
POLYESTER RESIN	0,05 – 0,08	0,00 %	0,00 %
ADDITIVES	0,01	0,00 %	0,00 %
TOTAL	**1,00**	**0,00 %**	**0,00 %**

PACKAGING MATERIALS	WEIGHT / KG	WEIGHT - % / VERSUS THE PRODUCT
CARDBOARD BOX	0,04	3,96 %
WOOD PALLET	0,02	1,91%
TOTAL	**0,06**	**5,87 %**

ENVIRONMENTAL INFORMATION

All data results are representative for 1000 kg of Terrazo™ COMPAC® Surfaces, as declared unit. Estimated impact results are only relative statements that do not indicate impact category endpoints, exceeding threshold values, safety margins, or risks. The declared product is an average that is not available for purchase on the market.

POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	3,93E+02	2,62E+01	1,46E+02	5,66E+02	1,42E+02	ND	ND	3,76E+00	6,75E+00	0,00E+00	5,35E+00	0,00E+00
GWP-fossil	kg CO_2 eq.	3,90E+02	2,62E+01	1,71E+02	5,87E+02	1,42E+02	ND	ND	3,76E+00	6,74E+00	0,00E+00	5,27E+00	0,00E+00
GWP-biogenic	kg CO_2 eq.	3,49E+00	8,90E-03	-2,60E+01	-2,25E+01	4,22E-02	ND	ND	1,11E-03	2,22E-03	0,00E+00	7,97E-02	0,00E+00
GWP-luluc	kg CO_2 eq.	2,94E-01	2,19E-04	1,45E+00	1,75E+00	1,60E-03	ND	ND	9,27E-05	5,46E-05	0,00E+00	1,91E-03	0,00E+00
ODP	kg CFC 11 eq.	1,07E-04	6,44E-06	4,00E-05	1,54E-04	3,20E-05	ND	ND	8,41E-07	1,60E-06	0,00E+00	9,36E-07	0,00E+00
AP	mol H+ equiv.	1,86E+00	5,36E-02	8,14E-01	2,73E+00	2,24E+00	ND	ND	4,05E-02	1,34E-02	0,00E+00	4,91E-02	0,00E+00
EP-freshwater	kg PO_4^{3-} eq.	3,68E-02	4,26E-05	1,97E-02	5,65E-02	2,31E-04	ND	ND	8,12E-06	1,06E-05	0,00E+00	1,94E-04	0,00E+00
EP-freshwater	kg P eq.	1,20E-02	1,39E-05	6,43E-03	1,84E-02	7,54E-05	ND	ND	2,65E-06	3,46E-06	0,00E+00	6,33E-05	0,00E+00
EP-marine	kg N eq.	2,93E-01	8,81E-03	2,12E-01	5,14E-01	5,72E-01	ND	ND	1,82E-02	2,23E-03	0,00E+00	2,03E-02	0,00E+00
EP-terrestrial	mol N eq.	3,29E+00	9,77E-02	1,82E+00	5,21E+00	6,35E+00	ND	ND	1,99E-01	2,48E-02	0,00E+00	2,23E-01	0,00E+00
POCP	kg NMVOC eq.	1,29E+00	3,46E-02	5,94E-01	1,92E+00	1,63E+00	ND	ND	5,45E-02	8,73E-03	0,00E+00	6,16E-02	0,00E+00
ADP-minerals y metals*	kg Sb eq.	1,46E-03	1,18E-06	4,48E-04	1,91E-03	4,32E-06	ND	ND	1,94E-07	2,93E-07	0,00E+00	2,40E-07	0,00E+00
ADP-fossil*	MJ	8,53E+03	3,84E+02	3,35E+03	1,23E+04	1,93E+03	ND	ND	5,20E+01	9,57E+01	0,00E+00	7,01E+01	0,00E+00
WDP*	m3	2,40E+02	-6,43E-02	1,45E+02	3,85E+02	-3,33E-01	ND	ND	1,34E-02	-1,60E-02	0,00E+00	1,75E-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.

POTENTIAL ENVIRONMENTAL IMPACT
ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG[2]	kg CO_2 eq.	3,75E+02	2,61E+01	1,75E+02	5,77E+02	1,41E+02	ND	ND	3,72E+00	6,70E+00	0,00E+00	5,20E+00	0,00E+00

[2] **THE INDICATOR** includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

USE OF RESOURCES

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	4,51E+02	5,89E-01	7,85E+02	1,24E+03	2,82E+00	ND	ND	8,39E-02	1,47E-01	0,00E+00	1,65E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	7,66E+02	7,66E+02	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,51E+02	5,89E-01	1,55E+03	2,00E+03	2,82E+00	ND	ND	8,39E-02	1,47E-01	0,00E+00	1,65E+00	0,00E+00
PENRE	MJ	7,32E+03	4,08E+02	3,58E+03	1,13E+04	2,05E+03	ND	ND	5,52E+01	1,02E+02	0,00E+00	7,45E+01	0,00E+00
PENRM	MJ	1,82E+03	0,00E+00	7,56E+00	1,83E+03	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	9,15E+03	4,08E+02	3,59E+03	1,31E+04	2,05E+03	ND	ND	5,52E+01	1,02E+02	0,00E+00	7,45E+01	0,00E+00
SM	Kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	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	ND	ND	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	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m3	6,56E+00	1,05E-03	3,30E+00	9,85E+00	6,13E-03	ND	ND	8,78E-04	2,63E-04	0,00E+00	8,42E-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 PRODUCTION

RESULTS PER DECLARED UNIT

INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	5,36E-03	1,01E-03	2,78E-03	9,15E-03	3,61E-03	ND	ND	1,36E-04	2,52E-04	0,00E+00	1,50E-04	0,00E+00
Non-hazardous waste disposed	kg	1,72E+01	1,58E-02	1,74E+02	1,92E+02	8,41E-02	ND	ND	3,20E-03	3,95E-03	0,00E+00	1,00E+03	0,00E+00
Radioactive waste disposed	kg	1,83E-02	2,75E-03	9,02E-03	3,01E-02	1,39E-02	ND	ND	3,72E-04	6,85E-04	0,00E+00	4,42E-04	0,00E+00

OUTPUT FLOWS

RESULTS PER DECLARED UNIT

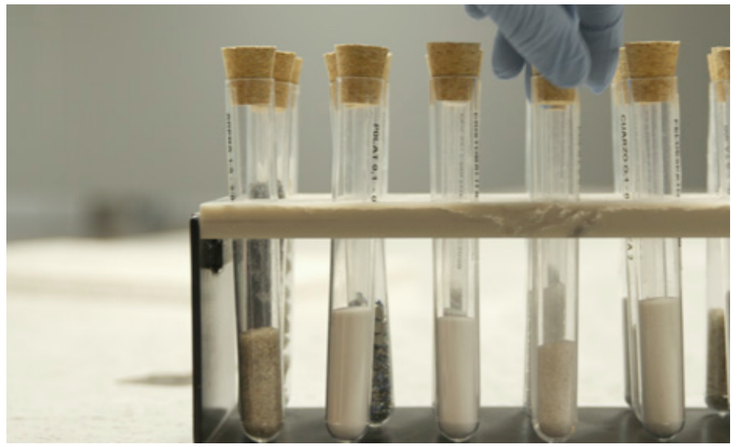
INDICATOR	UNIT	A1	A2	A3	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	1,85E-03	1,85E-03	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	6,55E-04	6,55E-04	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

INFORMATION ON BIOGENIC CARBON CONTENT

RESULTS PER DECLARED UNIT

BIOGENIC CARBON CONTENT	UNIT	QUANTITY
Biogenic carbon content in product	kg C	0,00
Biogenic carbon content in packaging	kg C	26,8

NOTA: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.



DIFFERENCES VERSUS PREVIOUS VERSIONS.

2022.07.29 Version 1

2023.03.25 Version 1.1
Editorial Change: Information correction.

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• ISO 14025:2010 Environmental labels and declarations - Type III Environmental Declarations - Principles and procedures.
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