

Dekton by Cosentino

ENVIRONMENTAL PRODUCT DECLARATION

EPD N° S-P-00916 / Environmental Product Declaration according to ISO 14025 and EN 15804
Date completed: 01/10/2016 / Validity: 5 years / Valid until: 01/10/2021
Based on PCR 2012:01 Construction Products and Construction Services version 2.1
Geographical scope of the EPD: International



1. Introduction and goals

This document contains the Environmental Product Declaration (EPD) for the construction surface Dekton® and the results of its Life Cycle Analysis (LCA), the process for which was completed on the 28/06/2016. This EPD is intended both for industrial customers as well as end users.

This study was conducted in order to understand the environmental impact of this worktop throughout its entire life-cycle (from cradle to grave). In other words, the results reflect the analysis of the production, transportation, and installation stages, use and end of life. Other goals of this study are the implementation of a systematic process of continuous improvement

for all the phases of this cycle and to publish an Environmental Product Declaration (EPD) with the results obtained.

This study was conducted according to the following standards:

- a. General programme instructions for the International EPD® System (Rev. 2.5 2015/05/11).
- b. Product Category Rules (PCR) for preparing an environmental product declaration (EPD®) for product group "Construction products and CPC 54 construction services" (Multiple UN CPC codes 2012:01 Construction Products and Construction Services (version 2.1).

c. International Standards ISO 14040:2006, ISO 14025:2006 & ISO 14044:2006.

d. UNE-EN 15804:2012. Sustainability for construction. Environmental product declarations. Basic regulations for construction product categories.

For Dekton® the CPC code is 376 as this is the CPC name for Monumental or building stone and articles thereof.

2. Description of the Company

As a leading company, it imagines and foresees, along with its customers and partners, solutions that offer design, value and inspire the life of many people. This goal is made possible by pioneering brands and leaders in their respective segments such as Silestone®, Dekton® or Sensa by Cosentino®. Technologically advanced surfaces for creating unique environments and designs for the home and public spaces.

The group has based its development on international expansion, an innovative research and development programme, respect for the environment and sustainability, its ongoing corporate commitment to society and the local

communities where it operates, training, equality and job security.

Cosentino Group currently distributes its products and brands in more than 90 countries, directly controlling and managing its own facilities in more than 30 of these countries from its headquarters in Almería, Spain. The multinational has 7 manufacturing plants (6 in Spain and 1 in Brazil), 13 kitchen and bathroom surface production centres (12 in the United States and 1 in Spain), 1 intelligent logistics centre (in Spain), 2 distribution hubs (in the United States) and more than 100 commercial establishments scattered throughout the world.

92% of its consolidated turnover is generated in international markets, which makes it the most global Spanish business group, according to the Atlas of the Leading Brands of Spain (FMRE, Ed. 2015).

Cosentino Group has been known from its very beginnings for its continuous reinvestment of resources into assets for production and distribution, and in innovation and technology. Result of this innovation is Dekton®, large format area of maximum resistance for work surfaces, facades, high traffic floors, indoor and outdoor.

2.1. Environmental commitment

The growth of Cosentino Group is closely linked to the implementation of guidelines of environmental respect, prevention and control with regard to all its production processes. Cosentino therefore invests in the best environmental technologies available to incorporate systems that improve the immediate surroundings and encourage care for the environment.

Over the past years, Cosentino Group has maintained a sustained growth pattern that has positioned it as a worldwide benchmark in the natural and artificial stone sector. Examples of this include the opening of new international infrastructures, the continuous expansion and improvement of its Industrial Park in Almeria (Spain), the incorporation of new production lines and innovative

developments for its wide range of brands and products.

All of these investments would not be possible without solid guidelines of environmental respect, prevention and control for all of the industrial processes in which Cosentino® is involved, from extraction to distribution.

The company's philosophy from the very start included establishing measures aimed at preventing and improving the environmental variables of its immediate surroundings, investing in the latest available technologies to ensure that Cosentino's development is categorically linked to respect for the environment. The goal is to incorporate the best environmental practices in all of its processes and improve on them on a daily basis.

The company thus does not waver when it comes to reinvesting an important

percentage of its yearly income in the implementation and setting up of different pioneering practices in the natural and artificial stone sector. With this in mind, we should mention the launch of Dekton® by Cosentino. This ultra-compact surface – launched in 2013 – is an innovative new category of surface created with the aim of becoming a leader in the world of international architecture and design, for both indoor and outdoor spaces. The result of an investment of 128 million Euros and 22,000 hours of research and development, Dekton® is fast becoming the perfect material for designers and architects worldwide. All of this has made it possible for Cosentino Group to become one of the most environmentally-friendly Spanish multinationals and able to develop new materials such as Silestone® Eco Line or Dekton®.

2.2. Policies and actions in favour of sustainability and environmental prevention

Today, Cosentino Group is one of the top global companies in its sector in terms of investment with regard to environmental policies and preventive and improvement actions. The following are a few examples of these measures and actions:

- Reception, storage, transportation and mixing of crushed materials with capture system, extraction and hose filters.
- Installations for the Purification of Volatile Organic Compounds (VOCs) through Thermal Oxidation.
- Plants for the Treatment of Water from Production Processes.

- Quarry restoration.
- Clean production.
- Energy efficiency through the use of electric vehicles within the industrial park.
- Sustainable mobility through the creation of cycle paths.

For Cosentino Group the pursuit of sustainability is a continuous challenge. Cosentino has set up an Environmental Management System in accordance with the ISO 14001 standard. The above-mentioned actions do not represent a goal but rather an ongoing commitment to achieve economic, social and environmental security for those areas where the company operates and is present. Cosentino's R+D department is currently conducting research into sludge generated by the external and internal cutting of quartz surfaces, in an attempt to

solve a well-known environmental problem.

Environmental challenges are an opportunity to consolidate the company's leadership and, with this in mind, Cosentino will continue to introduce and develop the most advanced environmental management processes and actions.

The company has therefore set up a technological observatory that aims to detect and use new emerging technologies in the stone sector. These can come from any source, for example, Universities, clients, suppliers, specialised forums, and in particular, from the employees themselves.

The company has an employee suggestion system that awards the best initiatives that lead to social and environmental improvements.

3. Description of the product and applications

Dekton is a sophisticated mixture of the raw materials used in the production of glass, latest-generation porcelain tiles and quartz surfaces. Dekton surfaces can recreate any type of material with a high level of quality. Dekton is available in large format (320 cm x 144 cm) and thin thicknesses (0.8 cm, 1.2 cm and 2 cm). It has superior technical characteristics: resistant to scratching, staining, UV rays, heat and thermal shock and very low water absorption.

All of these characteristics unique to Dekton® are present thanks to the technology used

in its production, which has been developed exclusively by the Cosentino Group's R&D department. Dekton® is manufactured with Technology of Sinterized Particles (TSP), an innovative ultra-compaction process. This contributes greatly to the fact that Dekton® is a completely revolutionary product; it is durable, very easy to maintain, and has potential for both indoor and outdoor uses including flooring, façades, wall cladding and worktops.

This product does not contain resins or organic additives and therefore polymerisation reactions are not used for its

production. The chemical composition of the product is fully inorganic.

Different formulas are used for DEKTON®, depending on the type of product required; this means that the final chemical composition can fluctuate without the physical or chemical properties being affected.

Nevertheless in accordance with its technical characteristics, it complies with group Bia of standard EN 14411:2006, such as tiles both for indoor and outdoor flooring applications

Table 1. Technical features of Dekton

Standard	Title	Result			
		Fam. I	Fam. II	Fam. III	Fam. IV
UNE EN ISO 10545-6	Resistance to deep abrasion	125 mm	106 mm	115 mm	115 mm
UNE EN ISO 10545-3	Water absorption, bulk density and open porosity	0.1%-2.50 g/cm³ – 0.2%	0.1%-2.61 g/cm³ – 0.2%	0.1%-2.52 g/cm³ – 0.2%	0.1%-2.44 g/cm³ – 0.2%
UNE EN ISO 10545-4	Resistance to flexion	60 N/mm²	67 N/mm²	59 N/mm²	60 N/mm²
UNE EN ISO 10545-5	Resistance to impact	-	0.85	0.85	0.85
UNE EN ISO 10545-9	Resistance to thermal shock	-	No damage	No damage	No damage
UNE EN ISO 10545-8	Linear thermal expansion	6.5·10 ⁻⁶ °C ⁻¹	5.1·10 ⁻⁶ °C ⁻¹	0.6·10 ⁻⁶ °C ⁻¹	5.8·10 ⁻⁶ °C ⁻¹
UNE EN ISO 10545-10	Expansion maximum and minimum humidity	0.1 mm/m – 0.0 mm/m	0.1 mm/m – 0.0 mm/m	0.1 mm/m – 0.0 mm/m	0.1 mm/m – 0.1 mm/m
UNE EN ISO 10545-12	Resistance to cold	-	No damage	No damage	No damage
UNE EN ISO 10545-13	Chemical resistance	No damage	No damage	No damage	No damage

Cosentino Group, in its policy of continuous improvement in line with sustainable development, has developed in recent years a series of investments in the environmental improvement of the production process of Dekton®.

• Atmosphere

- Airtight conveying and integrated transport systems
- Centralized dust collection and removal systems

- Installation for vacuum, treatment and recovery of the fumes from the furnace.
- MRD and SPR heat recovery systems in the furnaces.

• Energy efficiency

- LED lightning outdoor
- Maximum use of natural light indoor

• Waste recovery

- Set of installations designed to reuse raw waste prior to the baking process.
- Dust recovery system from the different

emission catchment areas.

- Sweeper-scrubber cleaning machine with water recycling system.
- Waste recovery project of incorporation of Dekton final waste in Silestone.

• Water management

- Cleaning water collection in deposits at various points of the factory.
- Technological water system by reverse osmosis.
- Decantation and clarification system that allows the treatment and recovery of process

water (95% recovery).

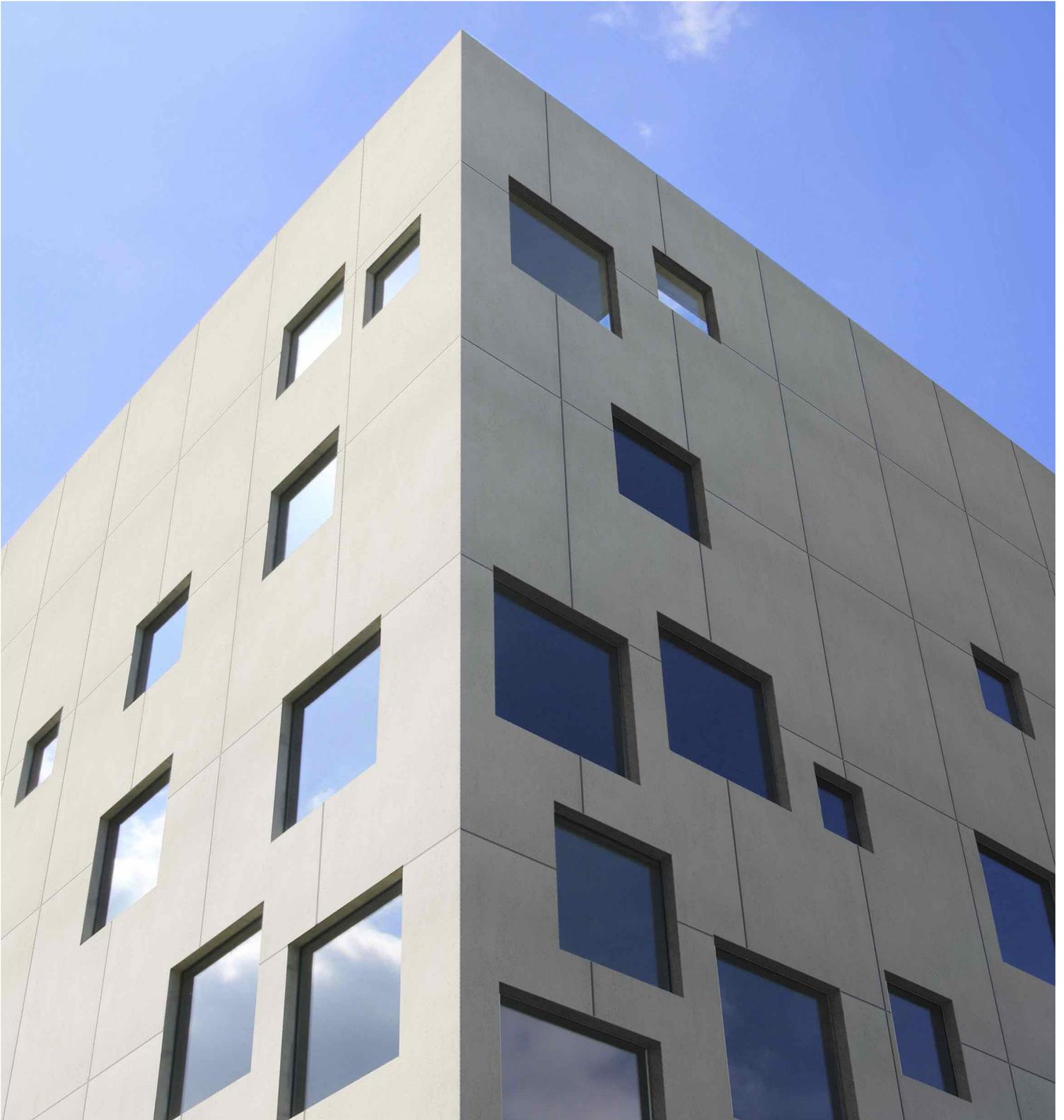
- Automatic cleaning systems for atomisers.

• **Sustainable mobility**

- Over 2 kilometers of bike lanes have been designed and bikes were bought as a means of internal transportation.

Dekton® by Cosentino forms the perfect partnership with designers and architects from all over the world for any interior or exterior project and with the highest guaranteed reliability. Seamless surfaces and spaces, without limits and without joins, that can be applied in large format for both indoor and outdoor spaces.

- Façades
- Flooring and pavements
- Garden
- Kitchen
- Bathroom
- Furniture



4. The Methodology of the Life Cycle Assessment

4.1. Functional unit

The functional unit is the reference in which all of the Life-Cycle Assessment data is expressed. In this case, it has been chosen as functional unit the production, transport, installation, use and end of life (from cradle to grave) of a ton (1.000 kg) of Dekton®.

4.2. Description of the processes and system boundaries

4.2.1 Production stage (A1-A2-A3)

The production stage is subdivided into three stages: A1, A2 and A3 represent, respectively, the supply of raw materials, transportation to the manufacturer, and production. These stages are described below, with additional technical information.

A1: Supply of raw materials.

This includes extraction and processing of raw materials and the energy that is used upstream for the production process of Dekton®.

A2: Transportation from the supplier to the factory

The raw materials are transported to the factory. The modelling includes transportation by road, boat and/or rail for each raw material.

A3: Production

This stage includes the manufacture of the product and its packaging and the treatment of any waste and water generated in the production.

The main stages of the manufacturing process are described below.

Receipt and preparation of raw material

At the very start of the process, the raw materials are checked for quality and suitability. All raw materials are stored separately to prevent cross-contamination. The raw materials are transported by a conveyor belt

system, from the storage areas to a series of hoppers or purification systems exclusively designed for this process.

Milling and homogenization

The DEKTON® formula is transported from the hoppers or purification systems to a wet grinding process, in which, the different raw materials as clays, feldspars, frits, kaolin, talc, etc., are mixed in a certain ratio and are ground to a specific particle size. The particle size completely determines the speed and course of the chemical reaction that gives rise to DEKTON®. It also conditions the final properties of the product. This mixture is stored separately before use, following a pre-determined stabilization period.

Pigmentation

The pigmentation process is made up of a complex system of mixers, diluters and stirrers. This system is capable of mixing, depending on the colour/finish, inorganic pigments with the rest of the DEKTON® formula. These pigments also form part of the chemical reaction that gives rise to DEKTON®, thus the quality control of its chemical composition is thorough and rigorous.

Atomization

The already coloured DEKTON® formula is dried by atomization until a specific size, grain form and a specific humidity are achieved. The different powder products obtained are stored in separate silos. In this case, the humidity controls the fluidity of these small particles, allowing them to be deposited in the different receptacles that supply some of the subsequent decoration systems. They flow between the channels that supply the other decoration systems or that allow their movement during mixing systems. The atomized material remains for 48 hours in the silos to reach a correct homogenization.

Decoration systems

Using several unique mechanisms for their design and function, these small particles generated in the previous section, are carefully positioned on different locations on a belt, creating a continuous slab. The decoration mechanisms are what create the different aesthetic effects. These effects can be produced throughout the thickness of the slab or just on the surface. In total, and in the first phase of the production process, there are 16 different decorative systems that can work independently or simultaneously, or even in groups, resulting in an incredible design versatility.

Shaping system

The continuous slab is separated into several sections that later will create the finished slab, and that will be subject to an extreme ultra-compaction process. To do so, a unique press worldwide has been designed for its special dimensions and its capacity to compact. This process gives the slabs sufficient mechanical resistance to be able to move onto the next section, which is the final thermal process.

Thermal process

During this process, the finished slab is given its final physical, chemical and aesthetic properties. This process includes the application of high temperatures so that the different coloured particles react following a pre-established reaction path. Throughout this process, the raw material and initial pigments are transformed into several intermediary composites. These composites, through the application of heat, are controlled so that they react and so that they can follow the correct synthesis path.

Classification and storage

Warehouse manufacturing process is the classification and storage of slabs. They are classified horizontally in an automatic warehouse.

4.2.2. Construction stage (A4)

This stage involves one stage: A4, transportation of the product to the place of installation of Dekton.

A4: Transportation to the place of installation.

This is done by calculating the average transportation a ton of Dekton® taking into account transportation by 16-32 ton lorry and/or transoceanic container ships. The weight of the product taken to each destination was analyzed, taking into account the route taken and the number of kilometers by lorry and/or ship.

The installation stage (A5) has a value equal to 0 due that the most part of time, the complete slab is used and in the case to cut it, the consumptions are insignificant. In this stage there is a 0% of waste because it's used in the same work.

Table 2. Description module A4.

Parameters	Units (expressed by functional unit or declared unit)
Fuel type for vehicle and consumption, type of vehicles used for transportation; e.g. long distance lorry, ship, etc.	Lorry of transportation 16-32 t EURO 5 Diesel consumption: 0,0165 kg/tkm Transoceanic container ship. Consumption of heavy fuel oil: 0,00102 kg/tkm
Distance	Lorry: 968 km Ship: 3445 km
Capacity utilization (including returning empty)	100% volume (round trip)
Bulk density of the products transported	2.500-2.610 kg/m ³
Capacity Use factor	1

4.2.3. Use stage (B1-B7)

Dekton requires a low level of maintenance (B2), as it is only necessary to use a neutral liquid soap to clean it (phase B2) and water (phase B7). This means that the rest of the phases involving direct use of the product (B1 and B6) have a value of 0.

The technical properties of the product (hardness, resistance to scratching, abrasion or stains...) mean it is not necessary to repair, replace or rehabilitate Dekton®, and so phases B3, B4 and B5 have a value of 0.

4.2.4. End of life stage (C1-C4)

This stage is divided into the following stages:

- C1:** Demolition
- C2:** Transportation to the waste treatment center
- C3:** Treatment for reuse, recycling and rehabilitation
- C4:** Final dumping

The dismantling of Dekton® can be considered negligible in the overall demolition of a building as it already implies very low impact considering the impact of the length of time it had been installed. C1 can thus be considered irrelevant.

With regard to the management of the product after the end of its useful life, it is an 'engineered slab' and therefore inert both before and after its management as waste.

In the event that its management is by incineration, the product is neither flammable nor burns.

Therefore, the end of life for Dekton is considered to be in an inert landfill. Bearing this in mind, C3 is considered 0. Lastly, it should be said that the principle that says the party responsible for contamination pays has been considered in waste management.



Table 3. Description module C1-C4

Module	Parameters	Unit (expressed by functional unit or declared unit)	Value
C1 Deconstruction	Collection process specified by type	Kg collected of separated way	0
		Kg collected mixed with waste from construction	1000
C2 Transportation	Type and consumption of vehicle fuel , type of vehicles used for transportation	Lorry of transportation > 20 t EURO 5.	Diesel consumption: 0,0165 kg/tkm
	Distance	Km	25
	Capacity utilization (including the return empty)	%	100% volume (round trip)
	Bulk density of transported products	Kg/m ³	2.500-2.610
	Capacity Use factor		1
C3 Waste processing	Recovery system specified by type	Kg for recovery	0
		Kg for recycling	0
		Kg for energetic recovery	0
C4 Deposition	Deposición specified by type	Kg of product for final deposition	1.000 Kg disposed in an authorized landfill

4.2.5. Recycling stage (D)

At present, crushed stone from Dekton is being introduced in Silestone® models, to make the best use of the raw materials. In 2015 around 100 tons were used, whereas in 2016 even high rates of reuse are expected.

4.2.6. Boundaries of the system

The system limits define the processes

included in this declaration. This document considers each of the processes for obtaining the raw materials and product manufacture, transportation to the customer and the end of the product life ("from the cradle to the gate"). Figure 1 describes the system limits considered in this EPD, which coincide with those proposed in Multiple UN CPC codes 2012:01 Construction Products and Construction Services (version

2.1), (in accordance with this document, constructions, infrastructures, production of equipment and personnel activities have not been included) and considers the difference between the different product stage modules (A1-A3), transport to consumer (A4) installation, use and demolition (A5/B1/B2/B3/B4/B5/B6/B7/C1), transport of waste (C2) and end of life (C3/C4/D).

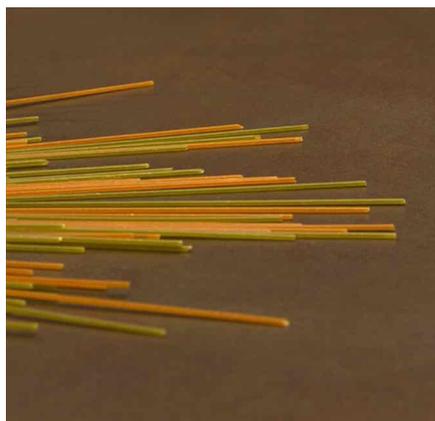
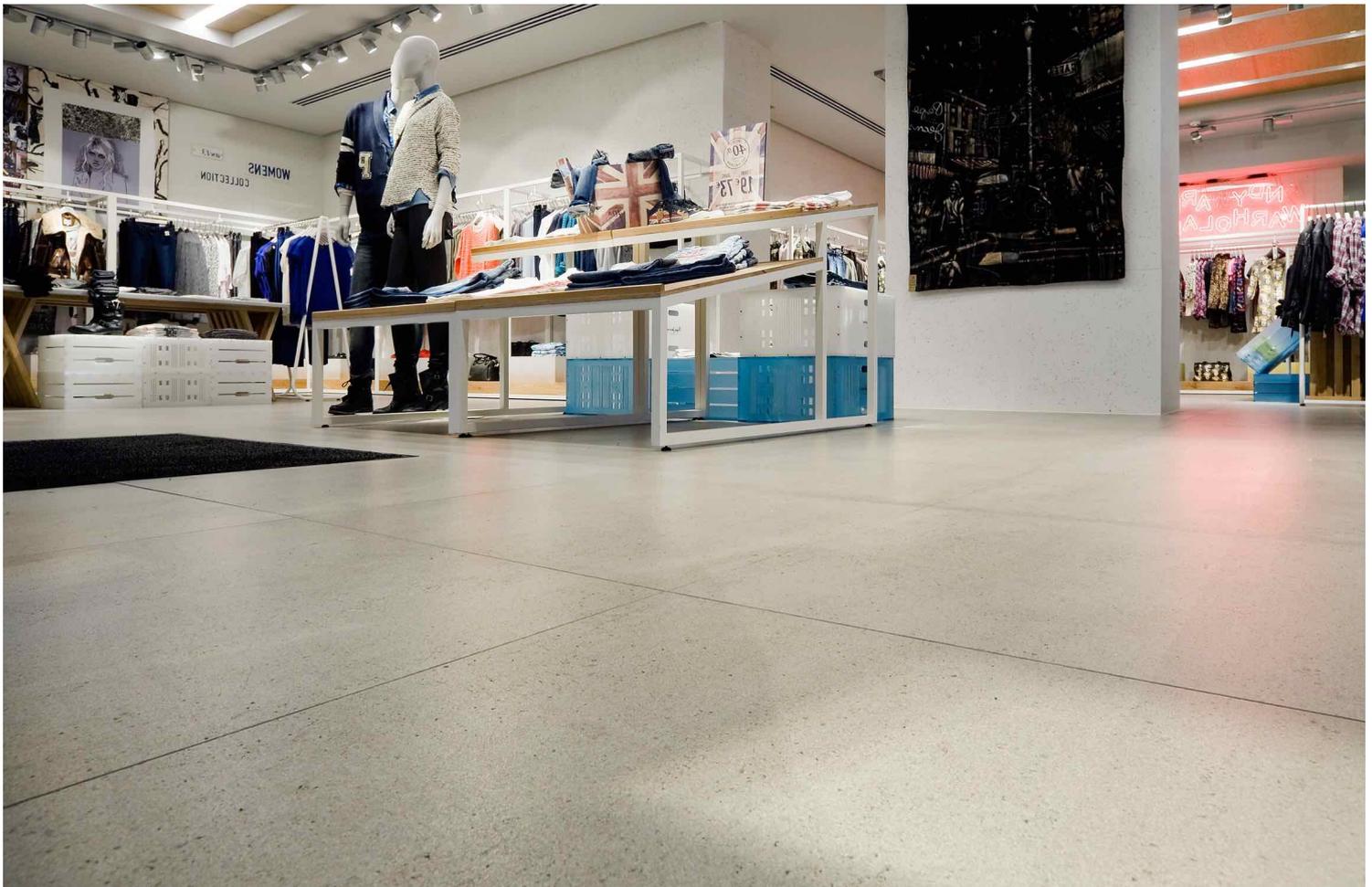
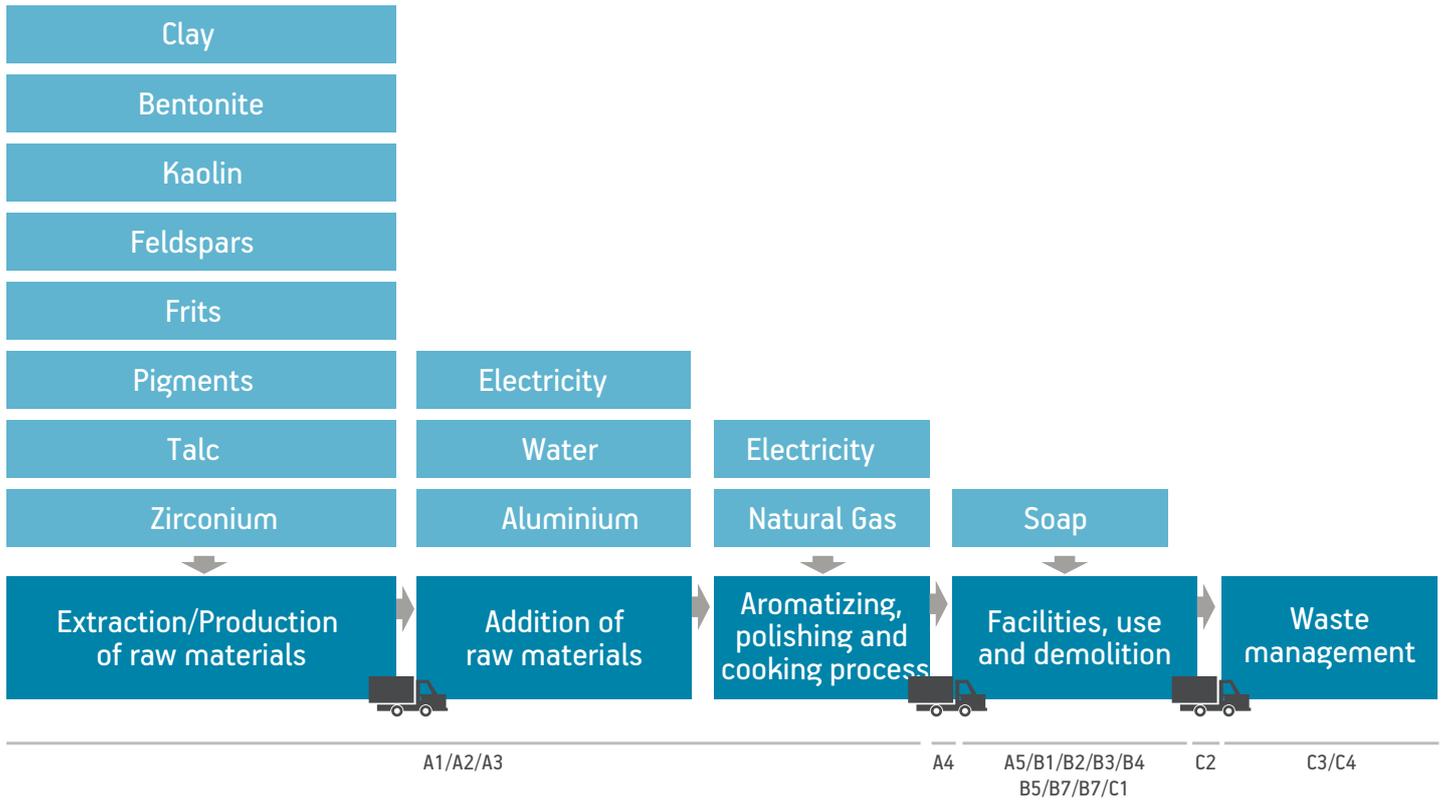


Figure 5. Boundaries of the system including modules



5. Data quality and assignation criteria

All the data used in the design of the processes was obtained during one whole year of production (2015). This data represents the activities currently carried out by the company for the manufacture of Dekton®. The data specified in this report is valid for the EPD until there are substantial modifications that affect the resulting impact. A 10% variation in environmental impact by a functional unit is considered to be a substantial modification.

All of the data used has been specifically measured at the facilities. Ecoinvent 3.0 has been chosen as a reference database because it coincides with the geographical area, the equivalent technology, the boundaries with regard to the natural and technical systems of the process, and due to its content of

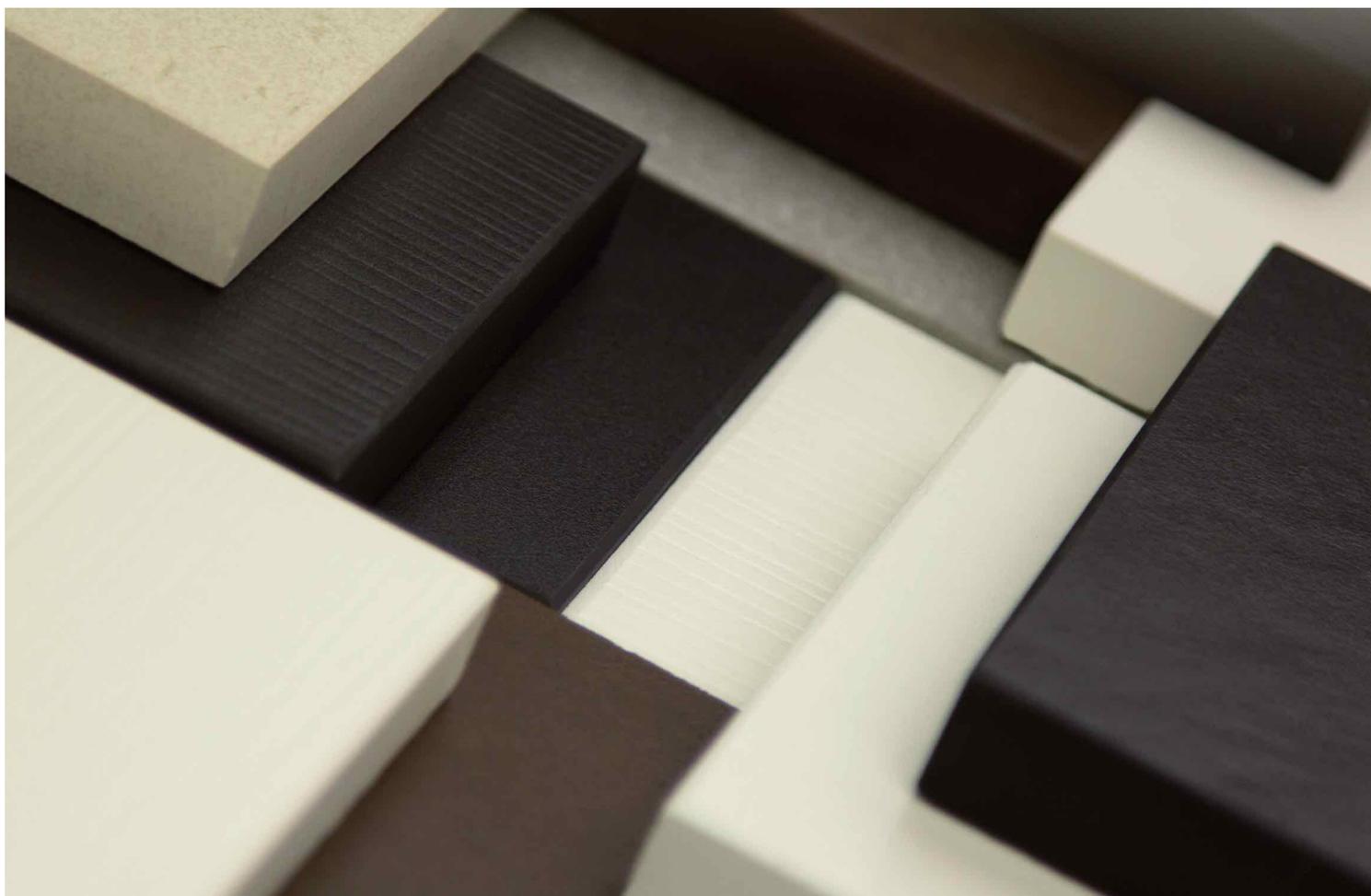
over 4,000 life-cycle inventories that are updated regularly. Even so, the following improvements have been made in order to make the description of the process representative:

In the case of Cosentino, the electricity supply company guarantees that 100% of electricity consumption comes from renewable sources. Considering the proportional contribution of renewable energy sources to the Spanish electricity generation mix in 2015 (Red eléctrica española, 2016), it has been considered that 25% of the electricity consumed in manufacturing Dekton® is wind energy, 33% hydraulic energy and 15% solar energy. This commitment by Cosentino to renewable energies means

that all environmental impacts associated with electricity consumption in producing Dekton® are reduced by more than 99% with respect to the common Spanish electricity mix consumption. For example, in the case of climate change, this means a reduction in CO2 emissions of 5,300 t eq. in 2015 in the production of Dekton®.

All emissions into the air, water and soil emitted during the life cycle of the product have been taken into account in this EPD.

As regards transportation of waste to the landfill, an average distance of 25 km has been considered.



6. Environmental performance of the product during its life cycle

This section provides information on environmental behaviour in accordance with Multiple UN CPC codes 2012:01 Construction Products and Construction Services (versión 2.1)), taking into account the boundaries of the system (see Figure 5 and Table 4).

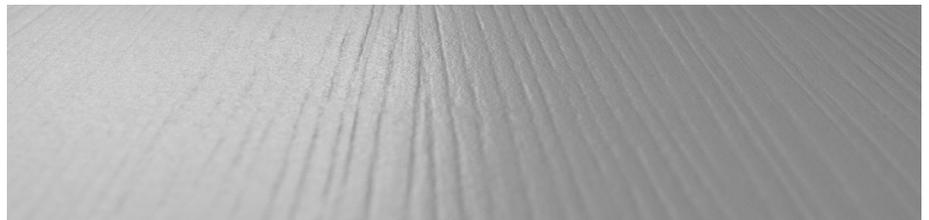


Table 4. Description of boundaries of the system (X= included; MND=Module no declared)

Product Stage			Construction stage		Use Stage							End of life stage			Benefits and loads out of the boundaries of the system
A1 Raw Materials	A2. Transportation	A3. Production	A4 Transportation	A5 Installation	B1. Use	B2. Maintenance	B3. Repairation	B4. Substitution	B5. Rehabilitation	B6. Energy use	B7. Water use	C1. Demolition	C2. Transportation	C3. Waste treatment	D. Reuse recycling and recovery
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

All the values in these tables are related to the functional unit of the study (one ton of product). Tables 5, 6 and 7 describe the environmental performance, use of resources and waste management of Dekton, always expressed in values per functional unit. None of the materials used for Dekton are on the 'Candidate List of Substances of Very High Concern' (<http://echa.europa.eu/es/candidatelist-table>).

The units, indicators of environmental impact and the conversion factors used are those set out in 'Appendix A of the MSR 1999:2' (Rev.1.1 dated 2005/9/25) and those set out in the CML-IA 3.0 methodology (<http://cml.leiden.edu/software/data-cmlia.htm>) for calculating environmental impact. This methodology is fully developed and used at a European level thanks to the reliability of its data and

its scientific bases which are supported in the methodology and procedures set out by Guinée et al. (2001). To calculate the primary renewable energy consumed, the Cumulative Energy Demand (CED) methodology developed by Frischknecht et al. has been used. (2007).

The impact categories calculated are in accordance with those set out in Multiple UN CPC codes 2012:01 Construction Products and Construction Services (version 2.1) and the results were divided depending on the stages and modules described in section 4. The latest available version of SimaPro software (SimaPro 8.0.3.) was used to calculate this data. The calculated impacts are potential and always consider standard operating conditions.

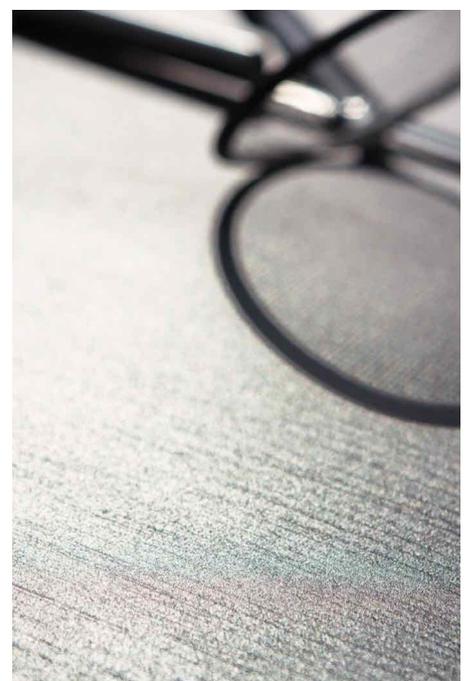


Table 5. Environmental performance per functional unit (1.000 kg Dekton)

Parameters	Product Stage	Construction Stage		Use Stage							End of life stage				D.Reuse, recycling and recovery
		A4 Transportation	A5 Installation	B1. Use	B2. Maintenance	B3. Repairation	B4. Substitution	B5. Rehabilitation	B6. Energy use	B7. Water use	C1. Demolition	C2. Transportation	C3. Waste treatment	C4. Waste disposal	
Abiotic resources depletion (elements) (kg Sb eq.)	1.7E-03	1,83E-07	0	0	1.13E-08	0	0	0	0	5.80E-10	0	1,2E-09	0	2,38E-08	-1,2E-04
Abiotic resources depletion (fossil fuels) (MJ.)	1.8E+04	1,93E+03	0	0	1.95E+01	0	0	0	0	2.87E-02	0	1,2E+01	0	5,46E+01	-1,8E+01
Global Warming (kg CO2 eq.)	1.2E+03	1,48E+02	0	0	1.33E+00	0	0	0	0	1.92E-03	0	9,4E-01	0	4,00E+00	-1,3E+00
Ozone depletion (kg CFC eq.)	1.4E-04	2,19E-05	0	0	1.28E-07	0	0	0	0	1.85E-10	0	1,4E-07	0	2,57E-07	-2,0E-07
Photochemical Oxidation (kg C2H4 eq.)	1.8E-01	2,71E-02	0	0	2.08E-04	0	0	0	0	3.89E-07	0	7,3E-05	0	5,14E-04	-4,8E-04
Acidification (kg SO2 eq.)	3.4E+00	8,07E-01	0	0	4.81E-03	0	0	0	0	9.22E-06	0	2,5E-03	0	2,00E-02	-8,2E-03
Eutrophication (kg PO4 eq.)	3.4E-01	1,07E-01			3.84E-03					9.31E-07		4,8E-04		4,24E-03	-6,8E-04



6.1. Understanding the results

If the stages of the life cycle are taken in to consideration, it is clear that the impact is concentrated in the stages A1-A2-A3, i.e. the generation of raw materials, transportation to the factory and the manufacturing of Dekton (Table 8). In order of importance of contribution to impact, stage A4 - transportation to the consumer - is next. Stages of end of life (C) have a residual contribution in all impact categories.

Lastly, recycling of part of the Dekton® waste

as a raw material for Silestone® (D), gives rise to a positive impact (shown as a negative value in Table 8) as this prevents the impact of using virgin raw materials, especially in the category of exhausting abiotic resources; however these prevented impacts must be considered in the product life cycle analysis in which this recycled material is applied

6.2. VOC emissions

With regard to volatile organic compound emissions (VOCs), Dekton® has the GREENGUARD certification awarded by UL Environment which focuses on Indoor Air

Quality and certifies building materials, furniture and finishing systems with low emissions of chemicals into the air. Every product, such as Dekton®, has to undergo emissions tests for their chemicals. These tests focus mainly on emissions of volatile organic compounds (VOCs), principally formaldehyde, styrene and aldehydes.

By having the GREENGUARD certification, Dekton® helps designers and construction professionals with a low emission product offering improved indoor air quality without compromising levels of design and performance.

Table 8. Percentage contribution to the impact of each stage

Impact category	A1-A2-A3 (MMPP, transportation and production)	A4 (product transportation)	B2 (maintenance)	C2-C4 (end of life)	D. Reuse, recycling and recovery a
Abiotic resources depletion (elements) (kg Sb eq.)	1,7E-03 (99,99%)	1,8E-07 (0,01%)	1,2E-08 (0,001%)	2,5E-08 (0,001%)	-1,2E-04 (-7,0%)
Abiotic resources depletion (fossil fuels) (MJ.)	1,8E+04 (89,7%)	1,9E+03 (9,8%)	1,9E+01 (0,1%)	6,7E+01 (0,3%)	-1,8E+01 (-0,1%)
Global Warming (kg CO2 eq.)	1,2E+03 (88,3%)	1,5E+02 (11,2%)	1,3E+00 (0,1%)	4,9E+00 (0,4%)	-1,3E+00 (-0,1%)
Ozone depletion (kg CFC eq.)	1,4E-04 (86,4%)	2,2E-05 (13,3%)	1,3E-07 (0,1%)	4,0E-07 (0,2%)	-2,0E-07 (-0,1%)
Photochemical Oxidation (kg C2H4 eq.)	1,8E-01 (86,3%)	2,7E-02 (13,3%)	2,1E-04 (0,1%)	5,9E-04 (0,3%)	-4,8E-04 (-0,2%)
Acidification (kg SO2 eq.)	3,4E+00 (80,3%)	8,1E-01 (18,91%)	4,8E-03 (0,1%)	2,2E-02 (0,5%)	-8,2E-03 (-0,2%)
Eutrophication (kg PO4 eq.)	3,4E-01 (74,9%)	1,1E-01 (23,3%)	3,8E-03 (0,8%)	4,7E-03 (1%)	-6,8E-04 (-0,1%)

a The impact of module D must be considered in the product life cycle analysis where the recycled material is applied.







6.3. Certifications and awards

6.3.1 Dekton, material with certified quality

- **ISO 14001**

this recognition certifies and consolidates the quality of Cosentino's environmental management system. The scope of this certificate includes the entire process in which the company is involved, from the design, manufacture and processing of Dekton® to its distribution and marketing. Among other aspects, it certifies conformity in controlling atmospheric emissions, waste management programmes, treatment systems and reuse of industrial water, disposal of chemicals and control of environmental risks

- **ISO 9001**

This certification endorses Cosentino's commitment to the continuous improvement of the quality of the services and products offered to customers worldwide.

- **Greenguard:**

Dekton® has been analysed by the Greenguard programme, certifying that it does not emit any VOC (Volatile Organic Compounds). Dekton® has obtained the Gold Greenguard and Greenguard certifications. The Greenguard Certified programme identifies those products that have been tested to ensure that their chemical and particle emissions according to strict guidelines for indoor air pollutants. Greenguard Gold assesses the sensitive nature of schools, along with the characteristics of such buildings. This certification includes maximum control over requirements related to chemical emissions.

- **NSF**

Dekton® has been tested and evaluated by NSF under NSF/ANSI 51, which is a toxicological evaluation of all product ingredients, conducting proficiency testing and successfully passing impromptu audits annually in all manufacturing sites.

- **ETE / ETA**

(Evaluación Técnica Europea / European Technical Assessment): Dekton® by Cosentino has obtained the European Technical Assessment (ETA) 14/0413 evaluation and the 1220-CPR-1459 certificate for CE marking as an external wall cladding for ventilated façades. Dekton® surface can be perfectly

incorporated onto façades by means of different types of concealed stainless steel or aluminium fixings. The ETA issued for Cosentino includes the characterisation and experimental evaluation of the Dekton® surface for use as external wall cladding for façades: wind load resistance, impact resistance and reaction to fire, durability, and the characterisation of the fixing components necessary for the surface to be conveniently incorporated onto façades. External cladding for ventilated façades with the CE marking offer performance that has been assessed by a third party and performance characteristics that have been confirmed and contrasted according to European methodologies.

6.3.2. Dekton®, milestones in Architecture and Design

- **Red Dot Award 2016**

Dekton XGloss by Cosentino Group was awarded the Red Dot, an international distinction for high design quality. Participants from 57 nations registered over 5,200 products and innovations for the Red Dot Award: Product Design 2016.

With 41 experts from around the world, all chosen according to strict rules, the Red Dot Award: Product Design guarantees a very high judging competence. The independent expert panel assesses each entry strictly and fairly, live and on site, according to criteria such as degree of innovation, formal quality, functionality and ecological compatibility.

- **Daniel Libeskind**

Beyond The Wall (Almeria, Spain). The only project of Daniel Libeskind in the Iberian Peninsula. The prestigious architect and designer Daniel Libeskind created in 2014 a spectacular architectural sculpture which was the first design and architecture landmark created with Dekton®. It is also the only project of Daniel Libeskind in the Iberian Peninsula. Under the title "Beyond The Wall", this impressive polycentric spiral is located in Cosentino Group headquarters in Almeria and was presented by Libeskind himself in February 2014. "Beyond The Wall" is not a traditional spiral with a single centre and axis, but a contemporary spiral which opens a plurality of directions along many different trajectories; a polycentric spiral, propulsively twisting to a dramatic zenith. The spiral is the result of the synergy between Libeskind's architectural vision and Cosentino's innovative

material Dekton®. "Beyond The Wall" shows how this ultra compact surfacing material can cover successfully a complex and contemporary architectural facade. Dekton® has been used in all exterior facades, interior walls and flooring. In total 305m² of Dekton® has been applied with 2cm pieces in different formats, including the large format size, 320 cm x 144 cm. The whitest finish of Dekton®, Zenith, has been the colour chosen for facades and walls, in contrast with the perfect black of Sirius colour, chosen for the flooring of this impressive work of 8.5 meters high.

- **Sonnets in Babylon (Venice, Italy)**

Cosentino Group was present, for the very first time in the Venice Architecture Biennale 2014 as technical sponsor of the Venice Pavilion, represented by the architect Daniel Libeskind. The architect chose Dekton® ultra compact surface for its outdoor sculpture "Sonnets in Babylon". A 5.5 meters high sculpture of a skewed axis form, making reference to the axis as fundamental element of drawing in architecture. The finish of this spectacular "X" has been designed as a ventilated façade that shrouds the entire work, using "Rediwa CAT 1" system from Wandegar Company. 65m² of panelling and 15m² of flooring in more than 50 pieces of various sizes, the largest 2.55m x 1.40m, with a thickness of 12mm. Panelling and flooring are presented in the same colour, Keranium, which has an industrial aesthetic.

After the Biennale, the sculpture is permanently installed in the Architecture University Luav of Venice, Italy

- **Baku airport (Azerbaiján)**

Dekton® was the chosen material for exterior flooring of the Azerbaijan's Baku airport. In total 4.300m² of the ultra compact surface, elaborated in equilateral triangles of 1.5m each side and in three different tones of the Dekton Sirius colour. The most decorative aspect of the project was with regard to its production – using a single material – of equilateral triangles measuring 1.5 metres on each side, and in three different colours, which when combined achieve a 3D effect of raised cubes.

The project by the architecture studio Autoban, required finding a material that was produced in large pieces to be able to make this pattern of triangles, and that could in turn, be cut into the described pieces without breaking. It had to be a material in a solid, uniform colour with a natural look and slate

finish, and which could also be made in two lighter coloured, but equally elegant shades with the same finish. Dekton® allowed this idea to be further developed thanks to its mechanical and aesthetic properties, making it the perfect choice for the project.

• **Dani García Restaurant (Marbella, Spain)**

The new Dani García restaurant in Marbella (two Michelin stars) opened its doors with Dekton® in 2014. The project, designed by the architect Juan Carlos Rodríguez, is the creation of a true fantasy and fairy tale setting, playing with the contrast of colours and materials used in the design.

The kitchen illuminates the rest of the premises thanks to the impeccable white Zenith Dekton® by Cosentino, applied to all worktops and tiling. In total 154m² of Dekton in white colour were used in the kitchen of the restaurant. The safety and hygiene that Dekton® offers for contact with food, as well as its ability to withstand both cold and heat without changing aesthetically or mechanically and high resistance to stains and scratching, were key elements for choosing this material.

For the flooring, 332m² of Dekton in the colour Keranium with its dark industrial look were applied, and created a contrast with the bright white kitchen. Large format slabs (320cm x 144cm) applied to the entire floor covering, creating a low maintenance and beautiful floor.

• **Restaurant DiverXO by David Muñoz (Madrid, Spain)**

DiverXO restaurant by David Muñoz (three Michelin stars) changed 2014 location in Madrid and made it with several Cosentino products, among them Dekton®. The aim of the architect Juan C. Herrera and of the design studio Lázaro Rosa-Violán was to create a space of creativity, elegance and fantasy that would offer a unique experience to diners. All this achieved thanks to the fabulous décor and carefully chosen materials throughout offering clean lines and attention to detail.

In the lounge-dining room Dekton®, in its colour Domoos, can be seen in the impressive central open-cooking area. The same colour of Dekton® has been used for the surface of the reception desk and for the tops of the restaurant trolleys. The three appliances were tailor-made according to the desired design. The kitchen, heart of the restaurant, also

includes Dekton® in its white colour Zenith for all the worktops David Muñoz and his team use, as well as Dekton® in Sirocco colour for coverings of floors and walls. In total 600m² Dekton have been applied to DiverXO restaurant.

From an operational standpoint, Dekton brings a number of unique technical features to the reception counter, to the central open-cooking area as well as to the restaurant trolleys and the worktops, walls and floor of the kitchen. What should be emphasised are the safety and hygiene offered by this material when food is in contact with it, a vital requirement for food professionals. Other features include its ability to withstand both the cold and heat without changing aesthetically or mechanically, and high resistance to abrasion, stains and scratching. But we must not forget the aesthetic aspect of Dekton, which offers unique and incomparable finishes and beauty.

• **Pepe Jeans Stores (Barcelona, Paris and Rotterdam)**

Pepe Jeans has included Dekton® as part of the new image of three of its stores: Barcelona, Paris and Rotterdam. The architecture studio "Househamhenderson Architects" chose Dekton's colour Strato for the flooring of the three commercial premises, aiming to create an elegant and industrial floor, which would perfectly combine with the environment giving it a strong personality and character. Strato colour is sourced from concrete, offering an urban feeling.

Aesthetics have to be combined with excellent technical properties which guarantee flawless look of the material over the course of time. Properties like high resistance to abrasion, stains or scratches and its low maintenance make of Dekton® a perfect product for a retail fashion store.

192m² of Dekton® were applied in Bacerlona Pepe Jeans store, 124m² in Paris' store and 252m² in Rotterdam's location.

• **Cajamar headquarters (Almería)**

Spanish bank Cajamar has applied a Dekton® façade to its headquarter building in Almería. With the goal of having aesthetic continuity of the design, the ventilated façade was chosen in the Dekton colour Sirocco, and Dekton® Danae was chosen for the exterior flooring covering in a discreet and elegant way up to and into the building itself, all external areas

that the public has access to.

Technical performance of Dekton® and the fact that it is easy to assemble, was key for choosing Dekton® for the façade. Over 2.000m² of Dekton® were used for the façade and overall around 20.000m² Dekton® surfaces in all the building.

• **Porsche Design Boutique (Illinois, USA)**

The new Porsche design boutique in Oak Brooks, Illinois (USA), has installed the ultra-compact surfacing material Dekton, Sirius colour, in the exterior façade.

In conceptualizing the Porsche Design boutique in Oak Brook, architect Eric Styer of DXU Architecture sought a façade material that would embody the client's design philosophy and that would set it apart from adjacent storefronts in an upscale retail development. The design concept required a material that would achieve a minimalist, homogenous look, with understated detailing. Key considerations such as budget, performance and aesthetic eliminated initial materials including stone, tile and fiber cement board. However, the zero-porosity, UV and freeze/thaw resistance, and dimensional stability characteristics of Dekton® made the material an ideal solution for the installation.

• **Restaurant André (Singapore)**

Chef Andre Chiang, chef of Singapore's Restaurant André, has chosen to apply Dekton® ultracompact surface in diverse areas of his recently renewed restaurant.

Walking into the newly renovated restaurant in the corner of trendy Bukit Pasoh Road in Singapore, one will be greeted with sleek designs, clean lines, muted tones and perfectly aligned table settings. The use of Dekton® Kelya, Keon and Galema colours can be seen from the entrance to the heart of the restaurant, built elegantly into Restaurant André's creatively fuelled kitchen.

• **Spain Pavilion at Expo Milano 2015**

Almost 1,000m² of the innovative ultracompact surface, Dekton® has been placed in the Spain Pavilion of Expo Milano 2015, designe by Fermín Vázquez Arquitectos b720 studio.

One of the most attractive and innovative interior design proposals to be found in the Pavilion will be the recreation of the tomato genome using Dekton® surfaces, printed using

inkjet technology. Within the context of the "The language of flavour" slogan, Fermín Vázquez architects studio came up with the idea of recreating the tomato genome - one of the most important recent steps taken in the field of biotechnology and scientific research. The b720 studio was strongly committed to Dekton® as the best partner in order to achieve this stunning design; the Dekton® tables in 2cm Zenith colour were personalised using an inkjet printer with the DNA sequence marked in letters and the shape of a tomato drawn on a scale of grey colours.

• **Awards**

Dekton® by Cosentino won the "KBB for

innovation in the kitchen" prize during the KBB Fair held at Birmingham (UK) in 2014.

- Cosentino Group won the "Crédito y Caución Internationalisation Award" in the "2014 Project of the Year" category, for the development of Dekton®.

- In 2014 Cosentino won the "Most Innovative Business Project in the New Technologies Field" for Dekton® by Cosentino. A distinction included in the Business Innovation awards of the financial publication Cinco Días.

- Dekton® by Cosentino won the ETA 14/0413 (European Technical Assessment) and 1220-CPR-1459 CE marking certificate as exterior

cladding for ventilated façades.

- Cosentino Group and Dekton were awarded the NAN Architecture and Construction 2014 Award for the best construction material in the paving and façades category.

- In 2015 Dekton® by Cosentino won the Janus de l'Industrie award and quality seal of the French Institute of Design in the components and materials category. These awards are sponsored and recognised by the French Ministry of Industry.

- IN 2015 Dekton® by Cosentino won the "Almanzora Prize" in the Innovation Category.





7. Information about the company and the Certification Body

7.1 Get in touch with Cosentino

The Life Cycle Assessment (LCA) study, its internal critical review with regard to document Multiple UN CPC codes 2012:01 Construction Products and Construction Services (versión 2.1) and this EPD have been prepared by Cosentino's R&D Department, coordinated by Dr. Alejandro Gallego Schmid. For any questions regarding the company please contact:

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7.2. Certification Body

Independent verification of the environmental declaration and data in accordance with Standard EN ISO 14025:2010.

Internal External

Verifier: Marcel Gómez Ferrer.

Marcel Gómez Consultoria Ambiental.
Individual verifier approved by the International EPD® System.
Email: info@marcelgomez.com
Tel: 0034 93 555 96 02

Date of publication: 01/10/2016

Valid until: 01/10/2021

Geographical scope of the EPD:
International

EPD® programme operator

The International EPD® System. Operated by EPD® International AB. www.environdec.com. Valhallavägen 81, Stockholm (Sweden)

7.3 Other information and mandatory declarations

This EPD and the PCR reference (Multiple UN CPC codes 2012:01 Construction Products and Construction Services (versión 2.1)) are available and published under The International EPD® System by EPD® International AB, and available at www.environdec.com

"EPD's for construction products may be incompatible if not compliant with Standard EN 15804"

"Environmental Product Declarations from the same product category in different programmes may be non-comparable"

PCR review was conducted by: The Technical Committee of the International EPD® System.
Chair: Massimo Marino.

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* Obtenga información sobre colores con certificación NSF a través de www.nsf.org