# Environmental Product Declaration

In accordance with standards ISO 14025 and EN 15804
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Scope of the EPD: International
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Based on PCR 2012:01 Construction Products and Construction Services version 2.3

SILESTONE® by COSENTINO

## 1. INTRODUCTION AND OBJECTIVES

This document contains the Environmental Product Declaration (EPD) of the SILESTONE® by Cosentino® construction surface and the results of its Life Cycle Assessment (LCA), having completed this process on 2019/03/12.
This EPD is directed at industrial clients as well as end clients. The scope of this document has been extended to cover the complete Silestone® range to which the ECO®, line belongs, and the data displayed have been updated with the 2017 data taken as a reference.

This study has been carried out to understand the environmental impact of this construction surface, including all the stages of the life cycle ('from the cradle to the grave'). This means that the results reflect the analysis of the production, transport, installation, use and end-of-life phases. Other objectives of this study are to establish a systematic process of continuous improvement in all phases of this cycle, and to achieve the basic results to publish an Environmental Product Declaration (EPD).
50 years is considered a useful life for the product.

This study has been carried out in line with the following standards:

- General Programme Instructions for the International EPD® System version 2.5 (2015-05-11). Swedish Environmental Management Council.
- 2012:01 Construction products and construction services version 2.3. Swedish Environmental Council
- International Standards ISO 14040:2006, ISO 14025:2010 and ISO 14044:2006.
- UNE-EN 15804:2012+A1:2013. Sustainability on construction. Environmental Product Declarations. Basic rules of construction product categories.

For Silestone® by Cosentino® the CPC code is 376, as it is the monumental stone description or for construction and similar articles.

## 2. COMPANY DESCRIPTION

Cosentino®, the world leader in the quartz surfaces category, is a global, family-owned

Spanish company dedicated to the design, manufacture, processing, distribution and marketing of innovative surfaces for the world of architecture and design. It creates brands and defines leading products with the objective of providing innovative and functional solutions for the home and public spaces under the criteria of careful design, innovation and respect for the environment.

The corporate purpose of Cosentino® is to inspire people through innovative spaces. As a market leader, it works with its clients and partners to devise and create forward-thinking solutions that provide design and value while inspiring people's lives. This objective is possible thanks to pioneering and leading brands in their respective segments such as Silestone®, Dekton® or Sensa® by Cosentino®. Technologically advanced surfaces that allow us to create unique environments and designs for the home and public spaces.

The group bases its development on global expansion, a ground-breaking programme of research and development, respect for the environment and sustainability, and its ongoing corporate commitment to society and the local communities in which it operates, promoting training, equality and occupational safety.

Cosentino Group currently distributes its products and brands in 114 countries and directly manages, from its central headquarters in Almería (Spain), its own facilities in more than 30 of those countries on every continent. 92% of its consolidated turnover is generated in international markets, making the Group the Spanish company with the widest international reach according to Atlas del Foro de Marcas Renombradas Españolas [[Atlas of Leading Spanish Brands] (FMRE, Ed. 2015).

A passion for change drives Cosentino Group to immerse itself in a constant process of continuous improvement to become a company that is increasingly more responsible about safety and the environment. Innovation is part of Cosentino Group's culture and purpose. Innovating is in the daily lives of everyone in the Group in order to think ahead and anticipate future needs.

## 2.1 ENVIRONMENTAL COMMITMENT

Respect for the environment and sustainability are fundamental pillars for the growth of Cosentino Group. It seeks to progress along the road to excellence and assume the maximum standards of quality and respect for the environment. With this objective, it commits to innovation and continuous improvement to advanced towards a model of a circular economy. This model allows it to reuse water in its processes, reduce waste and lengthen product life cycles by promoting repairs, reuse and recycling.

Cosentino Group's commitment intends to go further, making advances in the analysis of the life cycle in its products to identify and correct the main direct and indirect impacts that it generates with its activity. With this objective, it carries out constant investment in assets related to the environment and projects to establish the best available technology. In 2017, a highlight was a 13 million euro investment in environmental assets, and expenditure on control and improvement to the amount of 7.3 million euros, compared with 6.3 million euros in 2016.

Cosentino Group's Environmental Management system is the maximum guarantee of its commitment to the environment. It works every day to adapt to the needs of a demanding environment with a spirit of continuous improvement, and intends to exceed the requirements of current legislation.

This effort has resulted in the optimisation in the performance of the Environmental Management System and its integration with the rest of the business areas.

The update of the certification ISO 14001:2015 has also allowed a deepening in the perspective of the life cycle, risk management and the integration of the requirements of the interest groups.

Cosentino Group commits to innovation, since it aspires for its products to offer the best qualities of respect for the environment.
In recent years, various innovation projects have been developed, which have allowed it to launch materials that are increasingly sustainable.

## 2.2 POLICIES AND ACTIONS IN FAVOUR OF SUSTAINABILITY AND ENVIRONMENTAL AWARENESS

Currently, Cosentino Group is one of the leading companies in the world in its sector in terms of its volume of investment in environmental awareness and improvement policies and actions.
The following measures are noteworthy examples and practical cases:

- Systems for the reception, storage, transport and mixing of shredded products with collection, aspiration and an extensive network of bag filters with high dust purification performance.
- Facilities for the Purification of Volatile Organic Compounds (VOCs) by Regenerative Thermal Oxidation, considered as BAT (Best Available Technique).
- Water Treatment Plants for Production Processes that recycle 98% of the water used in the production processes. Additional purification treatments for possible excess water in the circuits generating reused water for irrigating the green areas present in the polygon.
- Landscape restoration, up to a total of 300,000 $m^2$.
- Performing environmental audits in quarries to check and improve the management of environmental aspects, especially in terms of waste segregation and storage.
- Energy efficiency through the use of electric vehicles inside the industrial park, as well as increasing the productivity of production processes.
- Reduction in direct $CO_2$ emissions by 14.7% compared with 2016.
- Mobility policy among employees to reduce equivalent $CO_2$ emissions and sustainable mobility through the development of bicycle tracks.
- 27% reduction in water used on the production process by square metre compared with 2016.
- Use of 100% certified renewable electricity.
- Assessment of waste managers through various visits to their facilities to check that the management carried out follows the correct environmental practices required by Cosentino Group.
- Installation of an independent chemical warehouse in the Industrial Park, with the objective of minimising the environmental impact in case of emergency.

For Cosentino Group, the quest for sustainability is a continuous challenge. The actions described above are not final, but a constant commitment to achieving economic, social and environmental well-being in those areas in which the company operates and is present.

The commitment to incorporate recycled or recovered material into its products has led the total volume of materials that incorporate recycled or recovered raw materials to increase to 1.2 million square meters. This has meant that the areas with these materials in their composition account for 19% of the production in the brands Silestone® and Dekton®.

The Silestone® Eco Line® Series, made up of at least 50% recycled material, at times reaching up to 75%, was the first step on this path that it continues along to increase the proportion of ecological materials.

Cosentino has always assumed the challenge of giving a second life to waste, especially those produced by raw material processes and quartz surfaces production. In this sense, in 2016 the R+D and Environment departments area launched an ambitious project called Project Reborn, which seeks to optimise the recovery of sludge from all the production processes of the Cosentino Group with the aim of converting them into raw materials of quality with the technical, economic, health and safety conditions that allow them to be reintroduced in the internal production cycle or in other activities of different sectors.

The environmental challenges are an opportunity to consolidate company leadership, and from this position Cosentino will continue to implement and develop the most advanced environmental management and action systems.

In this respect, two important Projects are being developed with a high positive impact in terms of Sustainability and the Circular Economy.

One of those is based on the installation of a photo-voltaic plant to gradually achieve up to 30% energy self-consumption used in the Cantoria industrial estate.

The other is the great challenge of the possible scarcity of useful water in the area through the installation of a regenerative wastewater plant which once treated, purifies the discharged water again, from the urban treatment plant present in the vicinity of the Cantoria industrial estate. Therefore, the consumption of water used in the production processes and in the irrigation of green areas will be carried out using reused water, thus preventing the consumption of this natural resource.

The company has a suggestion contribution system that rewards the best initiatives proposed by employees for improvement in the social and environmental field.

## 3. PRODUCT DESCRIPTION AND APPLICATIONS

Silestone® is the world leader in the quartz surfaces category that was launched on the market in 1990. Composed of over 90% natural quartz, it is non-porous and highly resistant to stains and is used in architecture and decoration, created from ground-breaking research and development work that achieves a variety of beautiful colours, extraordinary textures and outstanding properties. All this make Silestone® an excellent surface for kitchen worktops, bathrooms, floors and wall cladding using the minimum number of joints.

Silestone® is made in its entirety at Cosentino Group's industrial park in Cantoria (Almería), and for every stage of its fabrication process, the company has developed new innovative technologies within the stone industry, as well as totally respectful of environmental care and protection.

Silestone® by Cosentino® outshines conventional materials such as granite and marble on many levels. It is highly resistant to stains, scratches and heat. All of this, along with much less impact and damage to the environment. Silestone® is the ideal product for the current environmental awareness of end consumers and architecture and decoration professionals seeking practicality and durability without compromising design and performance.

The following table shows a summary of the product's main technical characteristics:

TABLE 1. Silestone® technical characteristics

| TEST | STANDARD | UNIT | RESULT PER CATEGORY | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | I | II | III | IV | V | VI |
| **Water absorption** | EN 14617-1 | % | 0,05 | 0,03 | 0,03 | 0,04 | 0,05 | 0,04 |
| **apparent density** | EN 14617-1 | Kg/m$^3$ | 2453 | 2403 | 2403 | 2287 | 2133 | 2364 |
| **Flexural strength** | EN 14617-2 | MPa | 27,6 | 54,2 | 54,2 | 50,2 | 78,5 | 29,9 |
| **Wear resistance** | EN 14617-4 | mm | 25,5 | 26,5 | 26,5 | 29 | 30 | 31,5 |
| **Slip resistance (polishing)** | EN 14231 | Wet<br>Dry | 8<br>46 | 7<br>63 | 7<br>42 | 8<br>43 | 5<br>37 | 11<br>64 |
| **Resistance to thermal shock** | EN 14617-6 | % | 13 | -8,4 | 0,03 | 2 | -3,1 | -2,3 |
| **Impact resistance** | EN 14617-9 | J | 2,8 | 6,6 | 4,9 | 6,5 | 14,8 | 2,4 |
| **Thermal expansion coef.** | EN 14617-11 | x10-$^6$ ºC-$^1$ | 29 | 31 | 31 | 34 | 45 | 27 |

The components of Silestone® in percentage by weight are those indicated in the following table.

**Table 2. Weight percentage composition of Silestone®**

| COMPOSITION | % |
|---|---|
| Quartz | 85 – 95 |
| Resin | 5 – 15 |
| Pigments | < 5 |
| Additives | < 5 |

## 3.1. ECO LINE® SERIES FROM SILESTONE®

Aware of the importance of continuous innovation and of the new needs and sensitivities of today's citizens, Cosentino Research and Development, with the Eco Line® series of Silestone®, has succeeded in combining superior design and a range of performance and properties, together with a true ecological and sustainability component.

The ECO Line® series by Silestone® is a series made with at least 50% recycled materials such as porcelain, glass and mirror. In accordance with Cosentino Research and Development, 3,000 glass bottles are equivalent to approximately one ton of raw material. ECO Line® production reuses the equivalent of 50 million glass bottles per year. Likewise, it is calculated that ECO reuses the equivalent of 1.5 million bathroom mirrors of 1 $m^2$ and a height of 530 metres filled with vitrified ash. Its remaining composition is made up of natural stone and a partially vegetable resin. From an environmental perspective, this composition from recycled material allows ECO Line® to present, compared to the whole of Silestone®, 4% less photochemical oxidation, 11% less consumption of abiotic resources and 26% less acidification. The reductions are even greater for the consumption of fossil resources (-46%), climate change (-53%), eutrophication (-54%), and destruction of the ozone layer (-58%). The environmental data specific to the ECO line are included in Annex A.

The result is a new pioneering material that rationally and efficiently uses natural resources and therefore is truly durable and eco-friendly.

# 4. LIFE CYCLE ANALYSIS METHODOLOGY

## 4.1 DECLARED UNIT

The declared unit is the reference in which all the data of this Life Cycle Analysis are expressed. In this case, manufacturing, transport and end of life (from the cradle to the grave) has been selected as the declared unit of one ton (1,000 kg) of Silestone®.

## 4.2 DESCRIPTION OF PROCESSES AND SYSTEM LIMITS

## 4.2.1 PRODUCT STAGE (A1-A3)

The product stage is subdivided into three modules: A1, A2 and A3, that respectively represent supply of raw material, transport to manufacturer and manufacture.
These modules are described below, and include additional technical information.

**A1: Supply of raw materials.**
This includes the extraction and transformation of raw materials and energy consumption that takes place upstream of the production process of Silestone® by Cosentino®.

**A2: Transport from the provider to the production plant.**
The raw materials are transported to the factory. The modelling includes road and/or boat transport for each raw material.

**A3: Production**
This model includes the product production and its packaging. It also includes the treatment of any residue generated in this stage. In the case of Silestone® by Cosentino®, the residues generated during production is taken to an inert landfill.

The Silestone® fabrication process has various phases: The first phase starts with the reception, storage, transport and mixture of shredded and micronized elements of the raw material. In this process, the inorganic material formed by mineral compounds in different sizes, the resin, pigments and the other minority compounds are incorporated. In the case of colours with recycled components, such as the ECO® line, other components are added which, after being adequately processed, make up its composition.

Within this process, Cosentino® carries out this phase through the use of capturing, aspiration and advanced dust filtration methods to minimise these emissions into the atmosphere, using hoppers, enclosures with automatic shelter doors and aspiration by bag filters.
It has also minimised the route of transported material in such a way that the possibilities of discharges to the environment are reduced.
The entire facility is closed with fairing tape and hermetic enclosures.

After the mixing process, the material is moved to the vibro-compression zone, where it is subjected to a process in which it is compressed to eliminate the air while vibrating. This process achieves a consistent, homogeneous and pore-free material.

After this process, the material is transported to the oven, where the resin polymerisation is produced. Subsequently, the material is allowed to cool for 24-72 hours to eliminate internal tensions.

The next step is to cut, calibrate and polish the boards. These operations are carried out with abrasives and water, which is 98% recycled.

Finally, the tables are controlled by means of photometric devices through which the uniformity, tonality, etc. of the different Silestone® by Cosentino® products is verified.
The process ends with the labelling and storage of the product.

## 4.2.2. CONSTRUCTION STAGE (A4-A5)

This stage has just one module: A4, the transport of the product to the Silestone® place of installation.

**A4: Transport to the place of installation.**
The average transport of a ton of Silestone® has been considered, taking into account its transfer using 16-32 t lorries and/or trans-oceanic container ships. For this, the weight of the product taken to each destination has been analysed, taking into account the route taken and the number of kilometres travelled by lorry and/or ship.
The installation stage (A5) has an amount of 0, as very often the complete Silestone® board is installed, and if cutting is necessary, consumption is negligible. In this stage, there is 0% loss, because these are reused in the same work.

**Table 3. A4 module description**

| Parameter | Unit (expressed by functional unit) |
|---|---|
| Type and consumption of vehicle, type of transport vehicle; for example, long-distance lorries, ship, etc. | Transport lorry 16-32 t EURO 6. Diesel consumption: 0,0165 kg/tkm<br>Transoceanic container ship. Consumption of heavy fuel oil: 0,00102 kg/tkm. |
| Distance | Lorry: 760 km<br>Ship: 1610 km |
| Capacity use (including the empty return) | 100% volume (round trip) |
| Apparent density of the products transported | 2.130-2.460 kg/$m^3$ |
| Useful capacity factor | 1 |

## 4.2.3 USE STAGE (B1-B7)

Silestone® requires a low level of maintenance (B2), since a neutral liquid soap is needed for its cleaning (phase B2) and water (phase B7). The phase of direct use of the product (B1) has a value of 0. Likewise, as energy consumption is not necessary during the product use, the B6 phase also has a value of 0.

Table 4. Module description B2

| Module | Parameter | Unit (expressed by functional unit) | Value |
|---|---|---|---|
| B2. Maintenance | Maintenance process | Description of the source where the description can be found | Cosentino (2018) |
| | Maintenance cycle | Number of cycles per year | 50 cleans (one per week) |
| | Auxiliary materials for maintenance | Kg/cycle | 0.2 kg soap/ year |
| | Quantitative description of the type of energy and use during maintenance (for example, aspiration), energy, for example electricity, and import, where appropriate, and relevance | kWh o MJ | 0 |
| | Net water consumption | $m^3$ | 0.0008 $m^3$/year |
| | Direct emissions into the air, soil or water | kg | 0 |
| | Waste resulting from maintenance specified by type | kg | 0 kg/year to landfill |
| | Destination (specified by type) of waste resulting from maintenance, for example collection for recycling, for energy recovery, disposal; specified by route | kg | 0 kg/year to landfill |
| | Type of vehicle used for transportation, specifying the type of waste and output materials. | Lorry | Lorry is always used |
| | Load capacity of the vehicle | t | 16-32 |
| | Vehicle type and consumption | Diesel | 0,0165 kg/tkm |
| | Distant to construction site | km | 25 |
| | Utilisation capacity (including returns) | % | 100 |
| | Density of transported products | kg/$m^3$ | 1000 |
| | Volume capacity usage factor (factor: = 1 or <1 or ≥ 1 for compressed packaged products s.) | Not applicable | 1 |

The product's technical properties (hardness, resistance to scratching, abrasion or stains, etc.) make repair, replacement or rehabilitation of Silestone® unnecessary, so phases B3, B4, B5 have a value of 0.

## 4.2.4 END-OF-LIFE STAGE (C1-C4)

In this stage the following modules are considered:

**C1: Demolition**
**C2: Transport to the waste treatment centre**
**C3: Treatment for reuse, recycling or rehabilitation**
**C4: Final discharge**

The dismantling of Silestone® can be considered negligible in the demolition of a building, which in itself, has a very low impact considering the impact throughout the life of the installation. Therefore, C1 can be considered irrelevant.
With respect to the management of the product after its useful life, it is an "engineering board" and therefore inert before and after it is managed as waste. In the event that such management is by incineration, the product neither catches fire or burns. For this reason, the deposit of Silestone® in an inert landfill has been considered as the end of life. Taking this into account, C3 is considered 0.
Finally, indicate that the principle that the polluter pays has been considered for the calculation of waste management.

Table 5. C1-C4 Module Description

| Module | Parameter | Unit (expressed by functional unit) | Value |
|---|---|---|---|
| **C1. Deconstruction** | Collection process specified by type | Kg collected separately | 0 |
| | | Kg collected mixed with construction residues | 1.000 kg of Silestone® |
| **C2. Transport** | Vehicle type and fuel consumption, type of vehicles used for transport | Transport lorry 16-32 t EURO 6. | Diesel consumption: 0,0165 kg/tkm |
| | Distance | Km | 82 |
| | Capacity use (including the empty return) | % | 100% volume (round trip) |
| | Apparent density of the products transported | $Kg/m^3$ | 2.500-2.610 |
| | Useful capacity factor | | 1 |
| **C3. Waste processing** | Recovery system specified by type | Kg for reuse | 0 |
| | | Kg for recycling | 0 |
| | | Kg for energy recovery | 0 |
| **C4. Deposition** | Deposition specified by type | Kg of product for final deposition | 1,000 Kg of Silestone® deposited in controlled landfill |

## 4.2.5. SYSTEM LIMITS

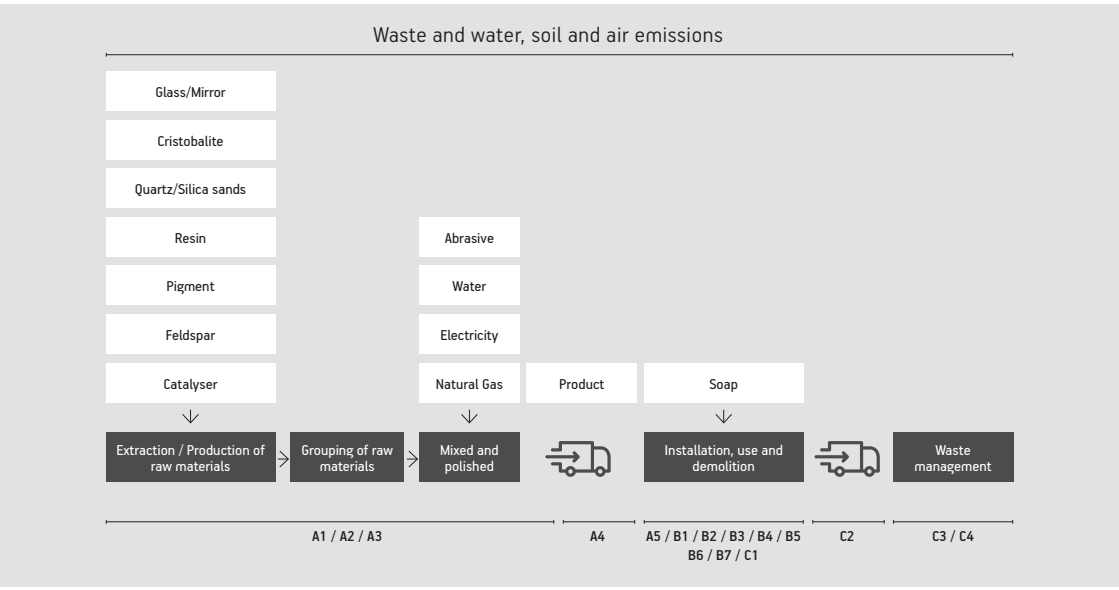
The system limits determine which processes are included in this declaration. This document considers each of the processes for obtaining the raw materials and manufacturing the product, transport to the customer and end of life of the product (from the cradle to the grave). Figure 1 describes the system limits considered in this EPD, which coincide with those proposed in Multiple UN CPC codes 2012:01 Construction Products and Construction Services (version 2.3), (according to this document, the constructions, infrastructures, production of equipment and personnel have not been included) and considers the differentiation in the different modules of product stage (A1-A3), construction (A4) and end of life (C1-C4). No benefits or charges have been considered beyond the limits of the system (module D).

## 5. DATA QUALITY AND ALLOCATION RULES

All the data used in the modelling of the processes were obtained during an entire year of production (2017). The data reflect, in a representative way, the activities currently carried out by the company for the production of Silestone®. The data specified in this document are valid for the EPD until there are substantial modifications that affect the impact produced. An increase of more than 10% in the environmental impact per functional unit is considered substantial modifications.

All the data used has been measured specifically at the facilities. Ecoinvent 3.4 has been selected as a reference database because it coincides with the geographical area, the technological equivalence, the limits with respect to the natural and technical systems of the process, and because it contains more than 4,000 life cycle inventories and is updated frequently. Even so, the following

**Figure 1. System limits including modules**



improvements have been made so that the description of the process is more representative. In the case of Cosentino, the electricity supplier company guarantees that 100% of the electricity consumption comes from renewable sources. Considering the proportional contribution of renewable energy sources to the mix of Spanish electricity production in 2017 (Spanish electricity grid, 2018), it has been considered that the electricity consumed in the Silestone® factory is 64% wind, 25% hydraulic and 11% solar. Cosentino's commitment to renewable energy means that all environmental impacts associated with the consumption of electricity in Silestone® are reduced by more than 94% with respect to consuming the common Spanish electric mix. For example, in the case of climate change the emission of greenhouse gases is only 95 g CO2 eq./MJ and this implies an emission of 24,689 t CO2 eq. in 2017 in the production of Silestone®.

All the materials, processes, emissions into the air, water and soil emitted during the life cycle of the product and the allocations have been made by mass have been considered in this EPD.
The only exceptions have been minor components including granite, glitter, adhesive agent, iron oxide pigments, accelerator, ferrosilicon (recycled), porcelain (recycled) and Dekton (recycled), which together represent less than 1% by mass of the total raw materials consumed.

## 6. ENVIRONMENTAL BEHAVIOUR OF THE PRODUCT DURING ITS LIFE CYCLE

Environmental behaviour of the product during its life cycle. In this section, information on the environmental behaviour of the product is provided in accordance with Multiple UN CPC codes 2012: 01 Construction Products and Construction Services (version 2.3), considering the limits of the system (see Figure 1 and Table 6).

**Table 6. Description of system limits (X=included; NDM: Non-declared module)**

| Product Stage | | | Construction Stage | | Use Stage | | | | | | | End of Life Stage | | | Benefits and charges outside the system limits | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1.Raw materials | A2. Transport | A3. Production | A4 Transport | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Treatment | 4. Discharge | D. Reuse, recycling and recovery |
| X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | MND |

All the values shown in the following tables refer to the functional unit of this study (one ton of product). Tables 7, 8 and 9 describe the environmental behaviour, resource use and waste management of Silestone®, always expressed in values per functional unit. None of the materials used in Silestone® are within the "List of candidate substances that cause special concern" in a percentage greater than 0.1% of the product weight (http://echa.europa.eu/es/candidate-list-table).

The units, indicators of environmental impacts and the selected conversion factors are those established in "Appendix A of the MSR 1999: 2" (Rev. 1.1 dated 2005/9/25) and those established in the methodology CML-IA 3.05 (http : //cml.leiden.edu/software/data-cmlia.htm) for the calculation of environmental impact. This methodology is fully developed and is used at the European level due to the reliability of its data and scientific bases, which are based on the methodology and procedures established by Guinèe et al. (2001). For the calculation of the renewable primary energy consumed, the Cumulative Energy Demand (CED) methodology developed by Frischknecht et al. (2007).

The calculated impact categories coincide with the proposals in Multiple UN CPC codes 2012: 01 Construction Products and Construction Services (version 2.3) and the results have been divided according to the stages and modules described in section 4. SimaPro software version 8.5.2.0 was used to calculate this data. The calculated impacts are potential and always considering standard operating conditions.

Table 7. Environmental Behaviour per functional unit (1,000 kg Silestone®)

| Parameters | Product Stage | Construction Stage | | Use Stage | | | | | | | End-of-life Stage | | | | D. Reuse, recycling and recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Collection process specified by type | Kg collected separately | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Waste treatment | C4. Discharge | |
| **Depletion of abiotic resources (elements) (kg Sb eq.)** | 6.6E-04 | 2.5E-07 | 0 | 0 | 1.0E-06 | 0 | 0 | 0 | 0 | 1.3E-07 | 0 | 1.2E-09 | 0 | 8.9E-08 | 0 |
| **Depletion of abiotic resources (fossil fuels) (MJ.)** | 1.6E+04 | 1.6E+03 | 0 | 0 | 1.3E+01 | 0 | 0 | 0 | 0 | 9.7E-01 | 0 | 7.4E+00 | 0 | 8.8E+01 | 0 |
| **Global warming (kg $CO_2$ eq.)** | 1.0E+03 | 1.1E+02 | 0 | 0 | 1.3E+00 | 0 | 0 | 0 | 0 | 9.0E-02 | 0 | 5.1E-01 | 0 | 6.1E+00 | 0 |
| **Ozone depletion (kg CFC eq.)** | 1.2E-04 | 2.1E-05 | 0 | 0 | 9.4E-08 | 0 | 0 | 0 | 0 | 9.7E-09 | 0 | 9.5E-08 | 0 | 1.1E-06 | 0 |
| **Photochemical oxidation (kg $C_2H_4$ eq.)** | 3.1E-01 | 4.6E-02 | 0 | 0 | 3.5E-04 | 0 | 0 | 0 | 0 | 1.9E-05 | 0 | 5.9E-05 | 0 | 9.5E-04 | 0 |
| **Acidification (kg $SO_2$ eq.)** | 4.3E+00 | 1.1E+00 | 0 | 0 | 7.4E-03 | 0 | 0 | 0 | 0 | 4.8E-04 | 0 | 8.8E-04 | 0 | 3.2E-02 | 0 |
| **Eutrophication (kg $PO_4$ eq.)** | 6.7E-01 | 1.0E-01 | 0 | 0 | 5.0E-03 | 0 | 0 | 0 | 0 | 5.9E-05 | 0 | 1.0E-04 | 0 | 6.5E-03 | 0 |

## Table 8. Use of resources per functional unit (1,000 kg Silestone®)

| Parameters | Product Stage | Construction Stage | | Use Stage | | | | | | | End-of-life Stage | | | | D. Reuse, recycling and recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1-A2-A3 | A4 Transport | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Waste treatment | C4. Discharge | |
| **Use of renewable primary energy as energy (MJ)** | 1.64E+03 | 3.60E+00 | 0 | 0 | 2.84E+01 | 0 | 0 | 0 | 0 | 2.52E-01 | 0 | 1.73E-02 | 0 | 1.46E+00 | 0 |
| **Use of renewable primary energy as raw material (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total use of renewable primary energy (MJ)** | 1.64E+03 | 3.60E+00 | 0 | 0 | 2.84E+01 | 0 | 0 | 0 | 0 | 2.52E-01 | 0 | 1.73E-02 | 0 | 1.46E+00 | 0 |
| **Use of non-renewable primary energy as energy (MJ)** | 1.77E+04 | 1.74E+03 | 0 | 0 | 1.62E+01 | 0 | 0 | 0 | 0 | 1.80E+00 | 0 | 7.86E+00 | 0 | 9.52E+01 | 0 |
| **Use of non-renewable primary energy as raw material (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total use of non-renewable primary energy (MJ)** | 1.77E+04 | 1.74E+03 | 0 | 0 | 1.62E+01 | 0 | 0 | 0 | 0 | 1.80E+00 | 0 | 7.86E+00 | 0 | 9.52E+01 | 0 |
| **Use of recycled materials (kg)** | 5.3E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Use of secondary renewable fuels (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Use of secondary non-renewable fuels (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Net use of running water resources ($m^3$)[a]** | 8.0E+02 | 6.2E-02 | 0 | 0 | 3.9E+00 | 0 | 0 | 0 | 0 | 7.3E+00 | 0 | 7.3E+00 | 0 | 2.3E+00 | 0 |

a For the calculation of the water footprint, the methodology AWARE 1.01 (Boulay et al., 2017) has been taken into account

Table 9. Waste generation and management per functional unit (1,000 kg Silestone®)

| Parameters | Product Stage | Construction Stage | | Use Stage | | | | | | | End-of-life Stage | | | | D. Reuse, recycling and recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1-A2-A3 | A4 Transport | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Waste treatment | C4. Discharge | |
| **Hazardous waste discharges (kg)** | 1.06E-02 | 3.21E-06 | 0 | 0 | 1.41E-05 | 0 | 0 | 0 | 0 | 2.85E-06 | 0 | 2.1E-04 | 0 | 1.2E-04 | 0 |
| **Non-hazardous waste discharges (kg)** | 4.14E+01 | 9.63E-04 | 0 | 0 | 0.045273 | 0 | 0 | 0 | 0 | 0.00376 | 0 | 6.3E-02 | 0 | 1.0E+03 | 0 |
| **Radioactive waste discharged (kg)** | 3.02E-02 | 1.23E-04 | 0 | 0 | 3.38E-05 | 0 | 0 | 0 | 0 | 1.13E-05 | 0 | 8.1E-03 | 0 | 4.3E-03 | 0 |
| **Components for its reuse (kg)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Materials for recycling (kg)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Materials for energy recovery (kg)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Exported energy (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## 6.1 RESULTS INTERPRETATION

If the stages of the life cycle are considered, it is clearly observed that the impact is concentrated in phases A1-A2-A3; that is, generation of raw materials, transportation to the factory and production of Silestone® (table 10). In order of importance of its contribution to the impact, it is followed by stage A4, which is transport to the consumer. The maintenance (B) and end of life (C) stages have a residual contribution in all impact categories.

Table 10. Percentage contribution to the impact of each stage

| Impact category | A1-A2-A3 (DG, transport and production) | A4 (product transport) | B2-B7 (maintenance) | C2-C4 (end of life) | D. Reuse, recycling and recovery[a] |
|---|---|---|---|---|---|
| **Depletion of abiotic Resources (elements) (kg Sb eq.)** | 6.6E-04 (99.8%) | 2.5E-07 (0.04%) | 1.1E-06 (0.2%) | 9.1E-08 (0.01%) | 0 (0%) |
| **Depletion of abiotic resources (fossil fuels) (MJ.)** | 1.6E+04 (89.9%) | 1.6E+03 (9.4%) | 1.4E+01 (0.1%) | 9.5E+01 (0.6%)" | 0 (0%) |
| **Global warming (kg $CO_2$ eq.)** | 1.0E+03 (89.3%) | 1.1E+02 (10.0%) | 1.4E+00 (0.1%) | 6.6E+00 (0.6%) | 0 (0%) |
| **Depletion of the ozone layer (kg CFC eq.)** | 1.2E-04 (83.9%) | 2.1E-05 (15.1%) | 1.0E-07 (0.1%) | 1.2E-06 (0.9%) | 0 (0%) |
| **Photochemical oxidation (kg $C_2H_4$ eq.)** | 3.1E-01 (86.6%) | 4.6E-02 (13.1%) | 3.6E-04 (0.1%) | 1.0E-03 (0.3%) | 0 (0%) |
| **Acidification (kg $SO_2$ eq.)** | 4.3E+00 (78.4%) | 1.1E+00 (20.9%) | 7.9E-03 (0.1%) | 3.3E-02 (0.6%) | 0 (0%) |
| **Eutrophication (kg $PO_4$ eq.)** | 6.7E-01 (85.4%) | 1.0E-01 (13.1%) | 5.1E-03 (0.7%) | 6.6E-03 (0.8%) | 0 (0%) |

## 6.2 VOC EMISSIONS

With regard to the emissions of volatile organic compounds (VOCs), Silestone® and also its ECO® line have the UL GREENGUARD accreditation, granted by the UL Environment, which focuses on Indoor Air Quality, certifying construction materials, furniture and finishing systems with low air emissions of chemical compounds. All products, like Silestone®, have had to undergo a test on the emissions of its chemical products.
These tests focus mainly on the emissions of volatile organic compounds (VOCs), mainly formaldehyde, styrene and aldehydes.

With the UL GREENGUARD certification, Silestone® helps designers and construction professionals with a low emission product that offers improvements in air quality in interior spaces, without compromising design and performance levels.

In addition, the Silestone® product has been tested against VOC emissions through the ISO 16000 STANDARD and classified as A + according to requirements of the French legislation Decree 2011-321 of 23 March 2011 in the external EUROFINS Product Testing laboratory.

## 6.3 CERTIFICATIONS AND AWARDS

## 6.3.1 SILESTONE®, A MATERIAL OF CERTIFIED QUALITY

In addition to the UL GREENGUARD certification and the tests carried out according to ISO16000, Silestone® and its manufacturer Cosentino® have other certifications that accredit its environmental values.

### ISO 14000

The scope of the certificate covers the entire process in which the company is involved from the design, manufacture and manufacture of Silestone® until its distribution and marketing. Among other aspects, compliance is certified in the control of emissions into the atmosphere, waste management programmes, industrial water treatment and reuse systems, the disposal of chemical substances and the control of environmental risks.

### ISO 9001

This certification confirms Cosentino's commitment to the continuous improvement of the quality of the services and products it offers to customers around the world.

### NSF

Silestone® has been tested and evaluated by NSF under standard NSF/ANSI 51. Obtaining the NSF certificate involves a toxicological evaluation of all the product's ingredients, the performance of proficiency tests and the successful completion of unannounced audits every year at all manufacturing sites.

### CRADLE TO CRADLE

This certification presents a new approach to ecological design, focusing on analysing and cataloguing the total life cycle of a product or material, from the manufacturing process to the end of its life cycle. Its purpose is to promote the manufacture and use of products that are safe for the environment and 100% recyclable, conceiving new industrial methods for this purpose and analysing all the raw materials used for manufacturing. All products manufactured in accordance with these principles are now accompanied by a new certification mark, Cradle to Cradle (C2C).

## 6.3.2 SILESTONE®, AWARDS AND DISTINCTIONS.

In 2017, Cosentino® was awarded the following prizes:

- Francisco Martínez-Cosentino has been appointed Honorary Ambassador of the Spanish Brand. The Leading Brands of Spain Forum (Spain)

- Silver Architect's Darling Award (Germany) for C Magazine

- First Prize for the best Advert, Advertising Photography and Website. Agripina Awards for Advertising, Marketing and Communication (Spain).

- Best stand at the Interior Design fair. Interior Design Show Booth Awards (Canada).

- Advertising Campaign of the Year for Tops on Top with Cindy Crawford. EK&BBusiness Awards (United Kingdom)

- Endowment Sign for collaboration in the construction of the cultural centre Al Jalila (Dubai, United Arab Emirates).

Silestone® has also received several awards in recent years:

- 2017 First prize for Innovation in Materials for Silestone Eternal. Designer Kitchen & Bathroom Awards (Reino Unido).

- 2013 and 2014 "Greenest Countertop", "GreenBuilder" Magazine, United States. ECO by Cosentino® has been selected for two consecutive years as "Greenest Countertop", by readers of the American publication "GreenBuilder" Magazine. The results of the survey were announced in the annual edition of "Reader's Choice". "GreenBuilder" has a monthly circulation of 110,000 readers.

- 2011 Recycling Prize from the Generalitat of Catalonia to the "Best Material". The Department of Environment and Housing of the Generalitat of Catalonia awarded the "Recycling Prize 2011" to ECO by Cosentino®, in the "Best Material" category for being a product that prevents waste generation and for being recycled and recyclable. This award also recognises other important aspects such as compliance with current environmental regulations; R+D; the quality of its design; that integrates environmental aspects such as saving energy, minimising water consumption or decreasing the generation of emissions; and because it applies life cycle analysis methodologies and environmental standardisation mechanisms.

- 2011 Hot 50 Green Product for 2011, United States. The American magazine Green Builder included ECO by Cosentino® in the list of "50 Green Products of 2011". This list selects, from thousands of projects, the 50 most environmentally conscious products The objective of the magazine is to promote truly sustainable products that bring a positive change in the world to its 100,000 readers.

- 2010 Innovation Awards, Muy Interesante Magazine, Spain. It awards the most innovative products in response to the magazine's online readers. ECO by Cosentino® was a finalist in the environment category in its second edition.

- 2010 European Design and Environment Award, Spain. Its purpose is to value and promote the effort made in Spain by companies, entities and professional designers, highlighting them as models of good design from an environmental perspective. In addition, one of its objectives is to raise awareness among companies, public entities, designers and society in general on the importance of granting sustainable values to the creation of designs and products.

- 2010 Irish Industry Awards, Ireland ECO by Cosentino® has been confirmed as one of the finalists in the "Kitchen Product Environmental Award" category at the Irish Kitchen Trade Awards. This prize recognises the work of the manufacturers who have developed products that take into account ecological issues and demonstrate a commitment to protecting the environment.

- 2010 Focus Open. Baden-Württemberg International Design Award, Germany ECO by Cosentino® has received the Baden-Württemberg International Design Award in its silver version ("Focus in Silver"), an award open to various industries, and which rewards the best organic products on the market. The Focus Open Award

presents them annually at the Design Center Stuttgart. The awards ceremony took place in October 2010 in the German state of Baden-Württemberg.

- 2010 Bloom Awards, United States. ECO by Cosentino® has received this award from Interiors & Sources and the American Society of Interior Designers, for being a commercial product that focuses on sustainability and innovation in the interior design of commercial spaces. The organisation has taken into account aspects such as the efficiency of resources or the selection of materials during the manufacturing process.

- 2010 KBB Review Industry Awards, Great Britain. ECO by Cosentino® was one of four candidates in the eco-friendly and innovative products category. This award is designed to reward manufacturers who have developed a specific product that takes into account ecological issues and are aware of environmental conservation.

- 2009 Building Products Green Product Awards, United States. Prizes awarded in the sustainability, value of the contractor and innovation categories. The award-winning products not only contribute to a sustainable home by saving energy, water and other resources, but these products also help improve air quality, reduce carbon dioxide emissions generated in the home and help have a more durable home.In short, they represent the most innovative technology.

- 2009 Multi-Housing News Green Initiative Award, United States. These prizes recognise the most ecological business initiatives of their different departments.

- 2009 EcoHome Editor's Choice Awards, United States. This programme is held annually and rewards construction products for their innovation, performance and contribution to the most efficient and healthy commitment to caring for the environment.

- 2009 The American Society of Interior Designers (ASID) Bloom Awards The ASID Bloom Awards recognise the merits of sustainable products in commercial interior design. Winning products in five categories are chosen: furniture, flooring, textiles, lighting and innovative products. ECO® by Cosentino® received a mention of honour in the innovative materials category.

- 2009 Construmat Award for Technological Innovation, Spain. In the last edition of the Construmat fair, the most important in the construction sector in Spain, ECO® by Cosentino® received the award for Technological Innovation in the product category for coatings and installations. This distinction was delivered by the Minister of Environment and Housing of the Generalitat de Catalunya, Francesc Baltasar.

Other recognition and awards for ECO® by Cosentino® are: 2009 Interiors & Services Reader's Choice Awards (United States), 2010 NAN Award (Spain) and 2010 KB Culture Awards (United States).

# 7. INFORMATION ABOUT THE COMPANY AND THE CERTIFICATION BODY

## 7.1 CONTACT WITH COSENTINO

This environmental product assessment is property of Cosentino, S.A.U. The Life Cycle Analysis (LCA) study, its internal critical review in relation to the PCR 2012: 01 Construction Products and Construction Services (version 2.3). The revision of this PCR was carried out by The Technical Committee of the International EPD® System under the direction of Massimo Marino (info@environdec.com). The CEN standard EN 15804 document was used as a basis for this PCR. This EPD was drafted by Cosentino, S.A.U. under the coordination of Dr Alejandro Gallego Schmid. For any questions, the contact details of the company are:

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## 7.2 CERTIFICATION BODY

**Table 11. Summary table of certifications**

| **The CEN standard EN 15804 was used as a basis for this PCR.** | |
|---|---|
| **PCR** | PCR 2012:01 Construction Products and Construction Services (version 2.3) |
| **The revision of the PCR was carried out by:** | The Technical Committee of the International EPD® System under the management of Massimo Marino.<br>Contact via info@environdec.com |
| **Independent verification of the environmental declaration and data in accordance with EN ISO 14025: 2010** | ☐ Internal ☒ External |
| **External verifier:** | Mr. Marcel Gómez Ferrer<br>Marcel Gómez Consultoría Ambiental<br><br>Individual Verifier approved by the International EPD® System<br>Email: info@marcelgomez.com<br>Tel: +34 93 555 96 02 |
| **Accredited by:** | The International EPD® System.<br>EPD® International AB.<br>www.environdec.com<br>Valhallavägen 81<br>Stockholm (Sweden) |
| **Program Operator** | EPD® International AB |
| **Publication date:** | 27/12/2018 |
| **Valid until:** | 26/12/2023 |
| **Geographical scope of the EPD application:** | International |

## 7.3 OTHER INFORMATION AND COMPULSORY DECLARATIONS

This EPD and the reference PCR (Multiple UN CPC codes 2012:01 Construction Products and Construction Services (version 2.3), are available and published under the protection of The International EPD System, operated by EPD International AB and available on the following website www.environdec.com.

"EPDs of construction products may not be comparable if they do not meet the EN 15804 standard."

"Environmental Product Declarations of the same product category of different programme may not be comparable."

Revision of the PCR carried out by The Technical Committee of the International EPD System. President: Massimo Marino.

## 7.4 MODIFICATIONS COMPARED TO THE PREVIOUS REVISION

Prior to this environmental declaration, there was the environmental declaration S-P-00270 exclusively focused on the Eco by Cosentino® line based on 2013 data. In this new version, the environmental study was extended to the entire Silestone® range, taking into account the data for 2017, publishing the results of the Eco Line® series, with a different composition than Eco by Cosentino® in Annex A. These variations in the time scale, the composition and the type of product make a comparison of the environmental results obtained in both product declarations irrelevant.

The company description has been revised and includes the corporate purpose and the development that it has had since the previous version. The environmental commitment has also been updated and the new policies and actions in favour of sustainability and environmental prevention developed by Cosentino SA have been included in recent years.
Regarding volatile emissions, the new study carried out according to the ISO 16000 standard and its subsequent A + classification according to French legislation has been included.

By extending the study to the entire Silestone® range, the prizes and awards collected by the range have been included in recent years and have been complemented with awards and distinctions awarded to the company.

Finally, the contact has been updated in Cosentino S.A.U. and the scientific literature to include updated references.

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## **ANNEX A:** ECO LINE® SERIES BY SILESTONE® RESULTS

**Table A1. Environmental Behaviour per functional unit (1,000 kg ECO Line® Series by Silestone®)**

| Parameters | Product Stage | Construction Stage | | Use Stage | | | | | | | End-of-life Stage | | | | D. Reuse, recycling and recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1-A2-A3 | A4 Transport | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Waste treatment | C4. Discharge | |
| **Depletion of abiotic resources (elements) (kg Sb eq.)** | 5.9E-04 | 1.94E-07 | 0 | 0 | 9.96E-07 | 0 | 0 | 0 | 0 | 2.87E-09 | 0 | 1.04E-09 | 0 | 8.90E-08 | 0 |
| **Depletion of abiotic resources (fossil fuels) (MJ.)** | 8.0E+03 | 1.29E+03 | 0 | 0 | 1.33E+01 | 0 | 0 | 0 | 0 | 2.18E-02 | 0 | 6.60E+00 | 0 | 8.78E+01 | 0 |
| **Global warming (kg $CO_2$ eq.)** | 4.4E+02 | 8.84E+01 | 0 | 0 | 1.35E+00 | 0 | 0 | 0 | 0 | 2.01E-03 | 0 | 4.59E-01 | 0 | 6.06E+00 | 0 |
| **Ozone depletion (kg CFC eq.)** | 4.0E-05 | 1.66E-05 | 0 | 0 | 9.43E-08 | 0 | 0 | 0 | 0 | 2.17E-10 | 0 | 8.50E-08 | 0 | 1.14E-06 | 0 |
| **Photochemical oxidation (kg $C_2H_4$ eq.)** | 2.9E-01 | 5.46E-02 | 0 | 0 | 3.46E-04 | 0 | 0 | 0 | 0 | 4.22E-07 | 0 | 5.27E-05 | 0 | 9.44E-04 | 0 |
| **Acidification (kg $SO_2$ eq.)** | 2.6E+00 | 1.42E+00 | 0 | 0 | 7.45E-03 | 0 | 0 | 0 | 0 | 1.08E-05 | 0 | 7.85E-04 | 0 | 3.17E-02 | 0 |
| **Eutrophication (kg $PO_4$ eq.)** | 2.3E-01 | 1.23E-01 | 0 | 0 | 5.02E-03 | 0 | 0 | 0 | 0 | 1.33E-06 | 0 | 8.92E-05 | 0 | 6.50E-03 | 0 |

## Table A2. Use of resources per functional unit (1,000 kg ECO Line® Series by Silestone®)

| Parameters | Product Stage | Construction Stage | | Use Stage | | | | | | | End-of-life Stage | | | | D. Reuse, recycling and recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1-A2-A3 | A4 Transport | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Waste treatment | C4. Discharge | |
| **Use of renewable primary energy as energy (MJ)** | 1.8E+03 | 2.7E+00 | 0 | 0 | 2.8E+01 | 0 | 0 | 0 | 0 | 5.6E-03 | 0 | 1.5E-02 | 0 | 1.5E+00 | 0 |
| **Use of renewable primary energy as raw material (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total use of renewable primary energy (MJ)** | 1.8E+03 | 2.7E+00 | 0 | 0 | 2.8E+01 | 0 | 0 | 0 | 0 | 5.6E-03 | 0 | 1.5E-02 | 0 | 1.5E+00 | 0 |
| **Use of non-renewable primary energy as energy (MJ)** | 9.2E+03 | 1.4E+03 | 0 | 0 | 1.6E+01 | 0 | 0 | 0 | 0 | 4.0E-02 | 0 | 7.0E+00 | 0 | 9.5E+01 | 0 |
| **Use of non-renewable primary energy as raw material (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total use of non-renewable primary energy (MJ)** | 9.2E+03 | 1.4E+03 | 0 | 0 | 1.6E+01 | 0 | 0 | 0 | 0 | 4.0E-02 | 0 | 7.0E+00 | 0 | 9.5E+01 | 0 |
| **Use of recycled materials (kg)** | 1.0E+03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Use of secondary renewable fuels (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Use of secondary non-renewable fuels (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Net use of running water resources ($m^3$)[a]** | 4.3E+02 | 4.9E+00 | 0 | 0 | 3.9E+00 | 0 | 0 | 0 | 0 | 1.6E-01 | 0 | 2.4E-02 | 0 | 3.5E-01 | 0 |

a For the calculation of the water footprint, the methodology AWARE 1,01 (Boulay et al., 2017)

Table A3. Waste generation and management per functional unit (1,000 kg ECO Line® Series by Silestone®)

| Parameters | Product Stage | Construction Stage | | Use Stage | | | | | | | End-of-life Stage | | | | D. Reuse, recycling and recovery |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1-A2-A3 | A4 Transport | A5 Installation | B1. Use | B2. Maintenance | B3. Repairs | B4. Substitution | B5. Rehabilitation | B6. Energy use | B7. Water use | C1. Demolition | C2. Transport | C3. Waste treatment | C4. Discharge | |
| **Hazardous waste discharges (kg)** | 3.5E-03 | 2.49E-04 | 0 | 0 | 1.41E-05 | 0 | 0 | 0 | 0 | 6.38E-08 | 0 | 1.24E-06 | 0 | 1.67E-05 | 0 |
| **Non-hazardous waste discharges (kg)** | 1.3E+02 | 6.93E-02 | 0 | 0 | 4.53E-02 | 0 | 0 | 0 | 0 | 8.43E-05 | 0 | 3.72E-04 | 0 | 1.04E+03 | 0 |
| **Radioactive waste discharged (kg)** | 2.3E-02 | 9.29E-03 | 0 | 0 | 3.38E-05 | 0 | 0 | 0 | 0 | 2.52E-07 | 0 | 4.77E-05 | 0 | 6.53E-04 | 0 |
| **Components for its reuse (kg)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Materials for recycling (kg)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Materials for energy recovery (kg)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Exported energy (MJ)** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

SILESTONE®

by COSENTINO

A product designed by **COSENTINO®**

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