

Environmental Product Declaration

Quartz models by strategic partners



In accordance with
ISO 14025:2006 and
EN 15804:2012+A2:2019/AC:2021 for:

**Quartz models by
strategic partners**
from Caesarstone Ltd.

EPD of multiple products,
based on average results

Product

1111 - Vivid White
1141 - Pure White
2141 - Blizzard / Snow
4001 - Fresh Concrete
4003 - Sleek Concrete
4004 - Raw Concrete
4030 - Pebble / Oyster / Stone Grey
4120 - Raven
4141 - Misty Carrera / Ice Cap
4600 - Organic White
5131 - Calacatta Nuvo
5141 - Frosty Carrina
5143 - White Attica
5151 - Empira White
6011 - Intense White
6141 - Ocean Foam
6600 - Nougat
7512 - Ashen Marble
7514 - Darton
7524 - Golden Sky
9141 - Ice Snow

Programme

The International EPD® System,
www.environdec.com

Programme operator

EPD International AB

EPD registration number

EPD-IES-0013179

Publication date

15-2-2025

Valid until

15-2-2030

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

General EPD Information

Programme information

Programme

The International EPD® System

Website

www.environdec.com

Address

EPD International AB
Box 210 60,
SE-100 31 Stockholm
Sweden

Email

info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

PCR – Construction products 2019 1.3.4,

PCR review was conducted by: PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Life Cycle Assessment (LCA)

LCA accountability: Sher Consulting Services, Hadar Oryan

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by accredited certification body

Third-party verification: Epsten Group, Inc. is an approved certification body accountable for the third-party verification

The certification body is accredited by: A2LA 3142.03

Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Yes ☒ No

Procedure for following up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier

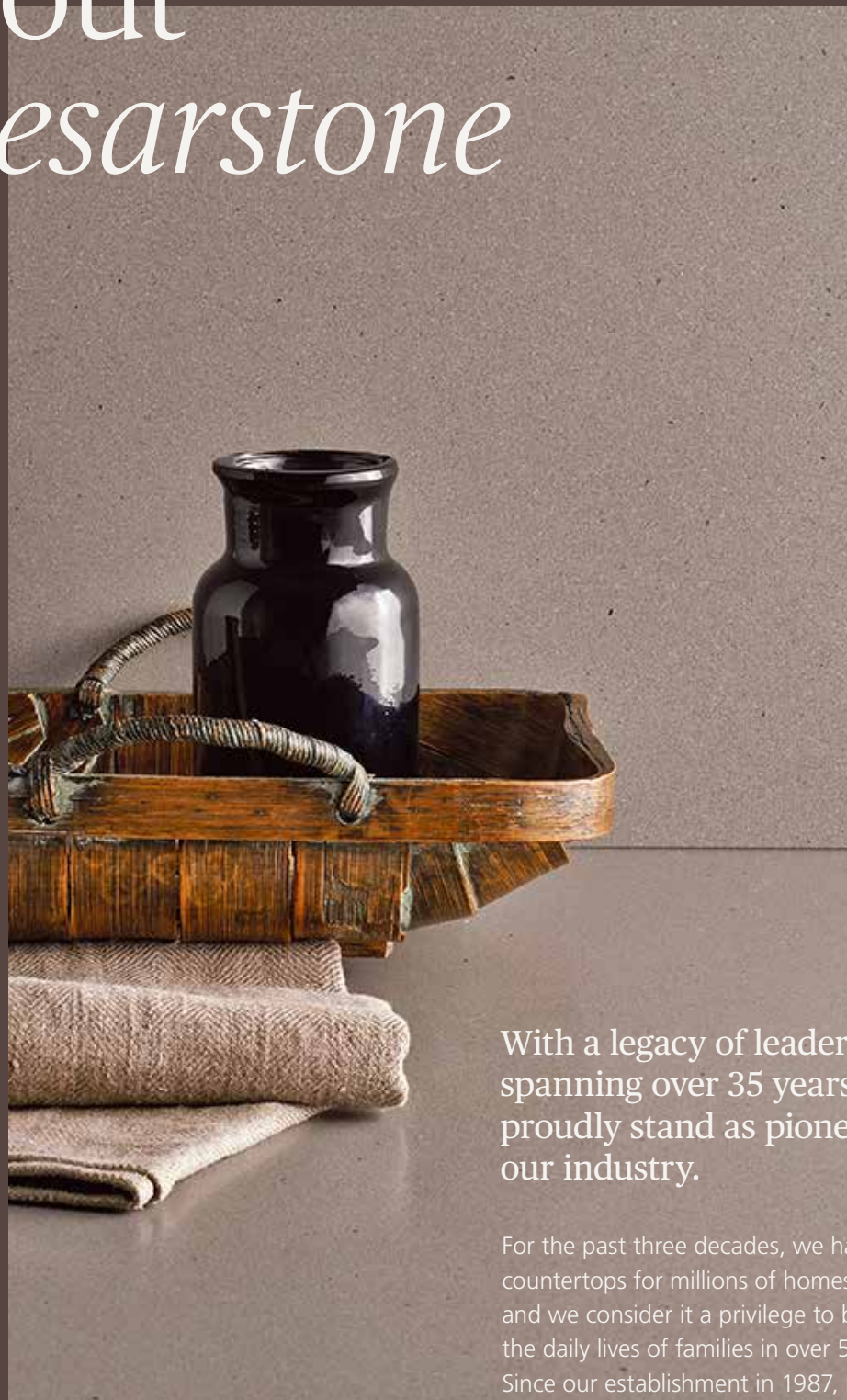


The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

The Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804 (2022-03), and based on EN 15804 + A2 (adapted) V1.00 / EF 3.1 Reference package with PCR – Construction products 2019 1.3.3, CPCR 003 Concrete and concrete elements, and complies with ISO 14040 and ISO 14020. This study has Compliance with other requirements in General Programme Instructions in the International EPD® System and complementary requirements at www.environdec.com. The LCA uses Ecoinvent 3.9 database.

About *Caesarstone*



With a legacy of leadership spanning over 35 years, we proudly stand as pioneers in our industry.

For the past three decades, we have crafted countertops for millions of homes worldwide, and we consider it a privilege to be part of the daily lives of families in over 50 countries. Since our establishment in 1987, much has changed. Kitchens have transformed, and there is a heightened awareness and concern for the natural environment, material resources, and climate change. As a trusted authority in the industry, we continue to lead by embracing these changes through our customer-centric approach.

Our ongoing commitment to sustainability and the safety of our customers and business partners has driven significant strides in research and development. We are evolving our engineered stone to create the next generation of surfaces. This strategic shift has expanded our product portfolio to include a range of innovative materials and surfaces that support our long-term growth and sustainability strategy. We have implemented a series of initiatives, innovations, and commitments to address the demands of an ever-evolving, sustainable world.



In recent years, we have strategically pivoted to optimize operations and reduce overhead costs. As part of this strategy, we ceased operations at our Sdot Yam site in June and closed our Richmond Hill facility in December. This shift involved transitioning part of our in-house production to Original Equipment Manufacturers (Strategic Partners) primarily based in Asia, including China, India, and Vietnam. Our strategic restructuring has focused on expanding these partnerships to ensure they meet high ESG standards and adhere to our EPD requirements. Our process involves two key stages: vendor selection and ongoing support to enhance their EPD performance, ensuring uniformity and quality across our supply chain.

As a trusted leader in the industry, we are taking the next steps to create new methods and standards to achieve our business and sustainability vision. We are focused on product innovation, environmental performance, ensuring end-to-end safety throughout the entire product lifecycle, and fostering a culture of governance that aims to meet the highest business standards. All of this is accomplished through our community of employees and partners who believe in the human capacity to create something new and extraordinary.

Business
Highlights

Our Employees
1680 full time
employees

Our Reach
+50 countries

Production Sites
2: Israel (Quartz)
and **India** (Porcelain)

Models
75 Quartz
37 Porcelain

Revenue in 2023
\$565.2M

For full financial information, see our annual report



We care about
the planet.
Just like you.



For us, sustainability is more
than a goal. It's a principle.

Aligned with the essence of our time, we hold a steadfast commitment to our planet's well-being. From the selection of materials to manufacturing and end use, we take responsibility for promoting practices that lead to change in our market towards a greener future. It's a core commitment that extends throughout our entire network of valued business partners.

We have established specific guidelines and goals for each of these commitments and are working carefully to meet our targets – a process that demands daily diligence and a collective commitment by all Caesarstone employees to implement our sustainability vision into practice.

Sustainable Development Goals

In recognition of our role as a global company, we are committed to working towards the Sustainable Development Goals (SDGs), as defined by the United Nations.

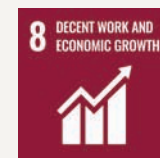
These global goals were established in 2015 as part of the 2030 Agenda for sustainable development, and are designed to achieve a better and more sustainable future for all. The 17 SDGs cover the world's most pressing social, environmental, health, and economic issues, with specific targets for each.

Caesarstone has identified the following *SDG goals* that are most significant and impactful for the company and has implemented a range of policies and actions to work towards these goals:



Ensure healthy lives and promote well-being for all at all ages

We work to ensure a healthy workforce and have created global standards and a training program to ensure the health and safety of our employees, suppliers, and partners. Caesarstone products are certified by GREENGUARD, maintaining stringent standards for air emissions, and our products comply with the HPD Open Standard and the NSF51 standard.



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

We are committed to providing quality, safe local jobs at our locations around the world, and we continue to seek additional growth opportunities. We are committed to recognizing diversity in all its forms and we have clear policies in place banning all forms of discrimination. To improve global resource efficiency in consumption and production, we have incorporated recycled raw materials into a range of our models.



Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

We are committed to growing our R&D team and investing in research that will enable us to upgrade the technological capabilities of our facilities with an emphasis on sustainability, including reducing our impact on climate change, increasing our use of recycled materials, and developing closed-loop materials and products.



Ensure sustainable consumption and production patterns

Our surfaces are long-lasting and durable, delivering improved lifecycle costs and investment value, with a lifetime warranty. Our products require minimal maintenance and a reduced need for sealants, cleaning materials, or detergents. Our facilities have environmental and quality management certifications, including ISO 14001, ISO 9001, and NSF certification for public health and safety, and we are committed to transparency and provide detailed product information on our product labeling and company website.



Take urgent action to combat climate change and its impacts

We understand the importance of energy efficiency and encourage the transformation to renewable energy as part of our efforts to reduce our impact on climate change. We have a continuous improvement process plan in place to meet our energy and emissions reduction goals. We provide information related to our environmental performance to our employees, stakeholders, and customers through our ESG report and the company website.

Main Accreditations

Caesarstone is ISO 14001 certified, a global standard for environmental protection; ISO 9001 certified, a quality management standard); NSF certification for public health and safety; and has been awarded the respected Greenguard.



ISO 14001: the international standard for establishing an environmental management system to guide working towards meeting environmental goals; monitoring compliance activities; investing in tools for enhancing a quality environment; employee and supplier training; health and safety procedures; and establishing efficient production processes.

Caesarstone is certified with the Environmental Management System in accordance with ISO 14001.

[Link to website](#)



Greenguard Gold: Caesarstone surfaces comply with the GREENGUARD GOLD standard (formerly known as GREENGUARD Children & Schools Certification), which evaluates the sensitive nature of school populations combined with the unique building characteristics found in schools and presents the most rigorous product emissions criteria to date.

[Link to website](#)



Greenguard: Caesarstone surfaces comply with GREENGUARD certification, which verifies that Caesarstone products meet the most stringent indoor air emission standards.

[Link to website](#)



HPD: The Health Product Declaration (HPD)® Open Standard* requires full disclosure of potential chemicals of concern in products by comparing product ingredients to a set of priority hazard lists based on the GreenScreen for Safer Chemicals and additional lists from other government agencies. In 2021, Caesarstone updated its HPD to align with the new HPD v2.3 standard. The HPD covers Caesarstone surfaces.

[Link to website](#)



Scientific Certification Systems (SCS): Certified for recycled content. Some of our models are made from pre-consumer recycled raw materials, such as mirror and glass or high-quality reclaimed post-production waste from the fabrication process.

[Link to website](#)



NSF51: The International Health and Safety Foundation sanitary standard ensures our working surfaces are safe for use in all food environments. Caesarstone's non-porous surfaces inhibit the growth of mildew and bacteria, thus creating a hygienic surface.

[Link to website](#)



Mindful Materials: Caesarstone products are found in the Mindful Materials library, a platform that enables the building industry to obtain information concerning statements and certifications regarding quality and environmental aspects of products.

[Link to website](#)



European Food Contact Materials regulations: The European Union has adopted wide-ranging regulation regarding materials that come into contact with food products (Food Contact Materials; FCMs). Caesarstone products abide by the two leading regulations: Regulation (EC) No 1935/2004 and Regulation (EC) No 2023/ 2006 on Good Manufacturing Practices.*

*This is an independent statement based on assessments by Intertek Consumer Goods GmbH, an internationally recognized testing body, in compliance with the regulation's criteria.

[Link to website](#)



Nordic Ecolabel: Caesarstone's models are listed in the Building Materials Database for the Nordic Ecolabel.

[Link to website](#)



LEED: Developed by the United States Green Building Council (USGBC), LEED Leadership Design is an American accredited certification program for the design, construction, and operation of high-performance green buildings. We are a member of USGBC, and Caesarstone's products can contribute to LEED v3 and LEED v4 projects.

Select Caesarstone models can contribute to the LEED Material & Resources credit, and can be included in the calculation for total recycled content used in a project. Our models also contributes to the Building Product Disclosure and Optimization – Material Ingredients credit, as we have published a Health Product Declaration (HPD) that covers all variations of Caesarstone surfaces.

More information on how Caesarstone contributes to LEED credits can be found [here](#).

[Link to Leed website](#)

Declare.

Declare: Our ingredients are clearly listed on Declare Labels that are verified and approved by an external third-party, for full transparency you can trust about what's exactly inside the majority of our products, which are 100% fit for use in Living Building Challenge (LBC) projects, LEED buildings, and International Living Future Institute (ILFI) initiatives.

[Link to website](#)



Red List Declaration: Caesarstone publishes a Red List declaration, self-certifying that none of the materials from the Red List, as detailed on the International Living Future Institute website, is intentionally added to a specific list of Caesarstone models.

[Link to website](#)

Product Information



Product Information

Product Name

Strategic Partners 29 products, engineered stone countertops from the following sites:
(Site 1 - 6, Site 2 - 12, Site 3 - 11)

Product Description

A engineered stone countertop, with the service life of 75 years.

UN CPC Code

The CPC Code 375 is described as Articles of concrete, cement and plaster.

Geographical Scope

The production of the Caesarstone countertop takes place in three facilities around the world.

- Site 1 – India
- Site 2 – Vietnam
- Site 3 – China

Calculations of raw material production considered our largest suppliers, located in countries such as: China, India, Australia, Vietnam, South Korea, Singapore and a few raw materials imported from Netherlands and EU countries. Distance to customers was calculated for each model based on its primary destination; Australia, USA, other areas (Rest of the world), UK, Canada, and South East Asia.

Target Audience

B2B

Product Identification

Site 2 Models	Site 3 Models	Site 1 Models
1141	1111	2141
4001	1141	4030
4003	2141	4141
4004	4003	4600
5131	4030	6141
5141	4120	6600
5143	4600	
5151	6011	
7512	6141	
7514	6600	
7524	9141	
9141		

Life Cycle Assessment Information

Declared Unit

The study Declared Unit is **one kg of Caesarstone countertop, over one lifetime**.

A single countertop is professionally referred to as a “slab”. A slab life cycle includes 75 years of use, assuming the product would be used as a countertop in home kitchens, and washrooms, and is independent of the life cycle of the building. For the full material list, see content information table.

The unit of one full slab can range from 210 kg to 419 kg. As such, this study researches only 1 kg of each slab, in order not to be affected by weight change due to product size, but rather only by components. Below the content information please find a table with the full weight of each product.

Representation of Models

29 quartz Caesarstone countertop models are represented in this study. These 29 models contain similar raw materials with slight variations – please see raw material table above. The PCR of construction products 1.3.3 allows us to present multiple products in one EPD, as the representation will contain the average results of the product group. In this study, the models' GWP variations vary by more than 10%. However, their grouping can be justified as all models belong to the same commercial collection (“quartz series” countertops). All models use the same raw materials (with variations in percentages as can be seen in the content table), undergo the same production process and use the same equipment. All 29 models are considered to be quartz series countertops. The production of these 29 products occur in three facilities located in Asia.

No weighting of data from various locations was practiced in this research. The LCA analyzed each site – as well as every model developed therein – on its own, including site production, sale amounts and proximity to customers.

Reference service life

75 years as seen in product declaration.

Time representativeness

Data was collected for July - November of 2023.

Database(s) and LCA software used

Simapro 9.3, Ecoinvent 3.9.1

For foreground data, the study source is Caesarstone company. This data includes product production, distribution, transport, customer use, and end-of-life technology true to three Strategic partners factory production for the timeframe of July-November 2023. Only half a year was represented in the study, so as to best depict the most accurate data, as some products underwent recipe change up until this time. For background data, the sources include Ecoinvent 3.9.1, and cut-off system model is chosen. Specifically, for A5 – customer maintenance, a reference of quantities for auxiliary materials was extracted from an EPD of a similar product. The calculation software used is SimaPro 9.3.

Description of system boundaries

Cradle-to-gate with options, module C1- C4, module D and optional modules. The following stages are included in this study: Production and transport of raw materials, processing of raw materials into final product, distribution to customers, installation at customer home and customer maintenance, transport and end-of-life treatment in landfill. The scenarios included are currently in use and are representative for one of the most probable alternatives.

¹ As follows PCR – Construction products 2019 1.2.4, CPCR 003 Concrete and concrete elements

² As written in product declaration

Content Information

Material	Range of % in product	Avg in Product	Biogenic Material, weight % of product	Biogenic material, kg C/ product
QUARTZITE + FELDSPAR	41.22- 89.82 %	81.69	0%	0
Sand	8.66- 44.97%	29.60	0%	0
Glass	0.06-32.63%	5.83	0%	0
Adhesive	9.52-15.04%	12.19	0%	0
Additives	0.01-2.45%	0.88	0%	0
Weight of finished product	210-280	217		

Packaging material	Weight, kg	Weight % vs the product	Biogenic Material, kg/c
Nylon	0.008 (Site 3)	0.8% Site 3	0
	0.0053 (Site 2 and Site 1)	0.5% Site 2 and Site 1	

* Conversion factor used from biogenic carbon to KG Co2: 3.67

Site 3

Model Number	Weight of 1 Slab (KG)	Size (length (M) X width (M) X thickness (MM))
1141	210	3.05M*1.44M*20mm
9141	210	3.05M*1.44M*20mm
6141	210	3.05M*1.44M*20mm
6011	210	3.05M*1.44M*20mm
2141	210	3.05M*1.44M*20mm
6600	210	3.05M*1.44M*20mm
4600	210	3.05M*1.44M*20mm
1111	210	3.05M*1.44M*20mm
4003	210	3.05M*1.44M*20mm
4030	210	3.05M*1.44M*20mm
4120	210	3.05M*1.44M*20mm

Site 1

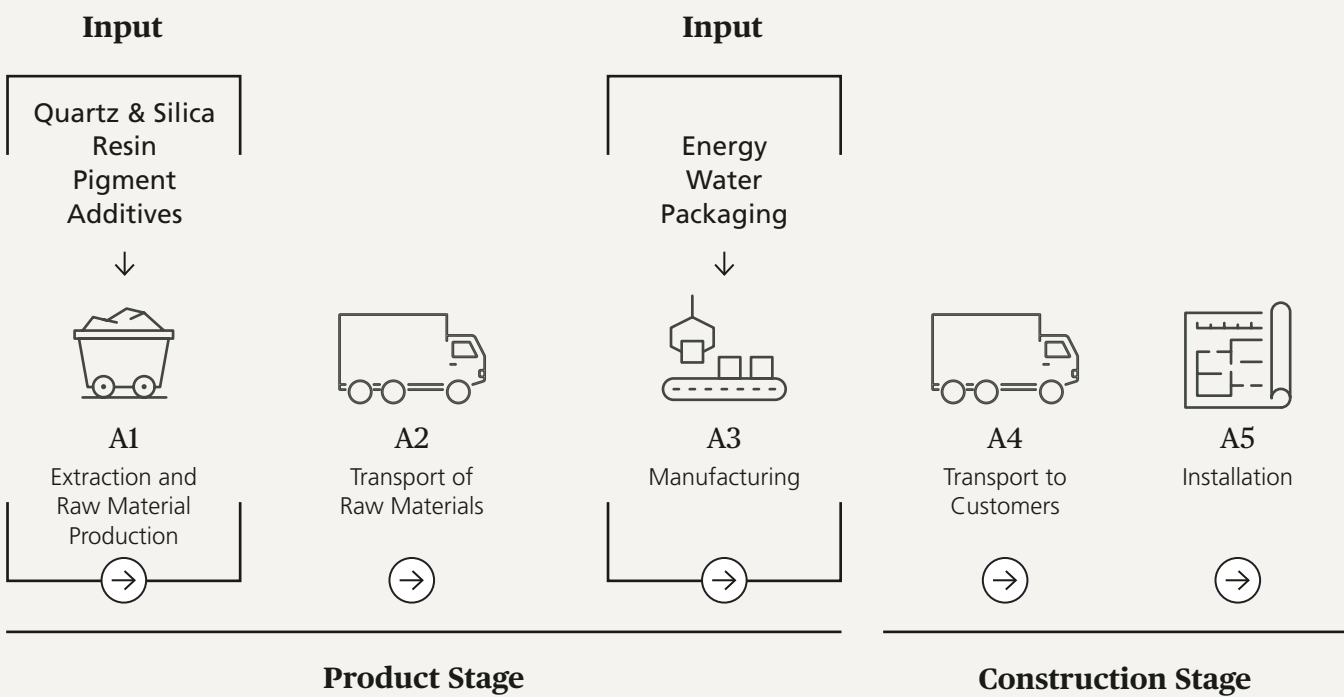
Model Number	Weight of 1 Slab (KG)	Size (length (M) X width (M) X thickness (MM))
2141	265	3300*1640*20mm
4030	268	3300*1640*20mm
4600	268	3300*1640*20mm
6141	263	3300*1640*20mm
6600	262	3300*1640*20mm
4141	268	3300*1640*20mm

Site 2

Model Number	Weight of 1 Slab (KG)	Size (length (M) X width (M) X thickness (MM))
9141	276	3300x1650x20 mm
1141	272	3300x1650x20 mm
7512	263	3300x1650x20 mm
4001	266	3300x1650x20 mm
4003	275	3300x1650x20 mm
4004	266	3300x1650x20 mm
5141	265	3300x1650x20 mm
5131	271	3300x1650x20 mm
5143	276	3300x1650x20 mm
5151	247	3300x1650x20 mm
7514	280	3300x1650x20 mm
7524	260	3300x1650x20 mm

Table - Full weight of finished products - standard size

System Diagram



A1 Depicts the raw material production located in countries such as; China, India, Australia, Vietnam, South Korea, Singapore and a few raw materials imported from The Netherlands and EU countries. Additionally, for each of the sites, the amount of plastic and metal used in raw materials packaging was added, and depicted as waste flows later on in A3. Site 2, the Vietnamese site, was the only factory that had access to their data for this information (due to variations in legislation between countries) and therefore this data is also used in site 1 and site 2 models to represent their raw material packaging. Also worth mentioning: site 3 used Kraft paper as part of their raw materials – as this is used in the production process as a type of “baking” sheet for the slabs throughout the process and in the kilns. However, site 1 and site 2 do not use Kraft paper but rather PVA sheets. Use of secondary materials can be noted only in A1, while regarding the use of recycled glass material in slab recipes.

A2 Describes the shipping and transportation of these materials to the port closest to each facility and the facilities themselves. The amount of raw material needed to produce a final 1 kilogram of each model is different – with raw material amounting to 1.10 kg - 1.88 kg.

A3 Includes the production of the countertops in each facility A3 also includes transport of nylon to recycling and transport of metal for reuse. Product manufacturing includes the following phases: Transport of raw materials to silos, liquid mixing, mixing of other raw materials, portion divider, color pattern injection (in specific models), presser, kiln, cooling conveyer belt, product calibration and PVA/Kraft paper cutting, polishing, nylon packaging wrapping, and storage.

Additionally, all sites have a water treatment facility on site – allowing for a closed water circuit and reuse of water throughout the process.

In reference to A3, three aspects are worth mentioning; the first, due to Caesarstone data availability, the model depicts the manufacturing stage as a “black box”, meaning there is a full depiction of used types and quantities of materials, fuels, auxiliary materials, energy, waste and emissions throughout the entire manufacturing process – yet with no internal division of different stages/machines within the manufacturing process.

In terms of electricity, the closest location and newest possible data sets on Ecoinvent were used. Please see table below:

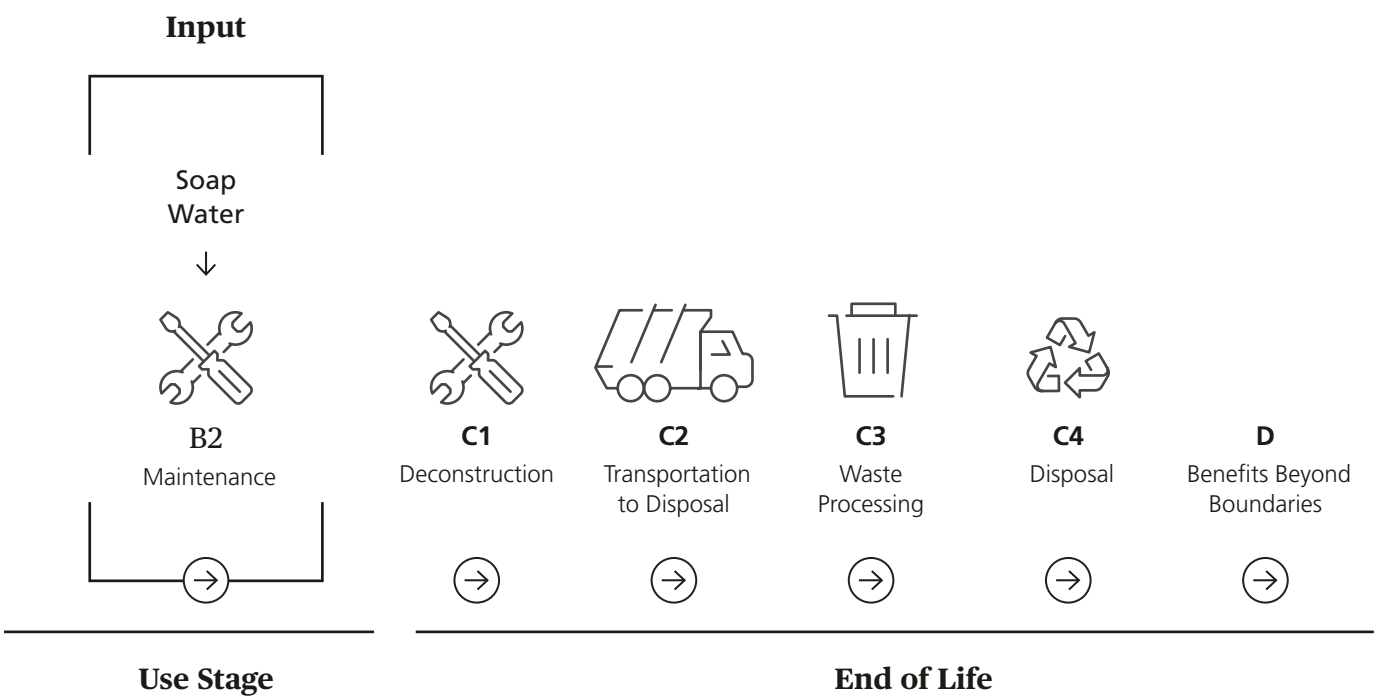
Site 3	Electricity, medium voltage {CSG} market for electricity, medium voltage Cut-off, U
Site 1	Electricity, medium voltage {IN-Northern grid} market for electricity, medium voltage Cut-off, U
Site 2	Electricity, medium voltage {VN} market for electricity, medium voltage Cut-off, U

Table 6: Electricity Data sets

Damage category	Unit	Site 3	Site 2	Site 1
GWP100	kg CO2-eq/kwh	0.625	0.676	1.248

Table 7 Electricity GWP -GHG impact

Water consumption and sludge (water + material loss) in site 1 lacked direct data as this data is not collected on site, and therefore was based on information collected from site 3.



Other waste flows (apart from material loss) of all three models are based on site 2 information (as site 1 and site 3 had no collection of waste flows on site) and include: raw material packaging for plastic and metal, PVA nylon (site 1 and site 2), hazardous waste bottles and wipes. Secondly, current product manufacturing includes material loss. The raw material of the input totals vary by models, as the heaviest input is 1.88 kg and the lightest is 1.10 kg. The finalized product weighs 1 kg. There is a 10-60% material loss during the production process. Material loss is depicted in the model as waste flow – passed to recycling and reuse. A3 models hazardous waste treated in incineration (based on site 2 data). The sludge is created due to material loss throughout the process, which occurs mostly in the calibration and smoothing out of the slabs.

The following table includes A3 inputs and outputs for each site:

A3 Inputs			
Inputs	Site 3	Site 2	Site 1
Electricity (kwh)	0.366	0.220	0.087
Natural gas (KWH)		0.112	
Diesel (GJ)	0.00002	0.002	0.000005
LPG (kg)			0.005
Acetone (KG)	0.020	0.003	0.002
Nylon for packaging (kg)	0.008	0.0053	0.0053
PVA film for Production (kg)		0.0031	0.0031
Water (kg)	0.002	0.826	0.005

Table 5 - A3 Inputs

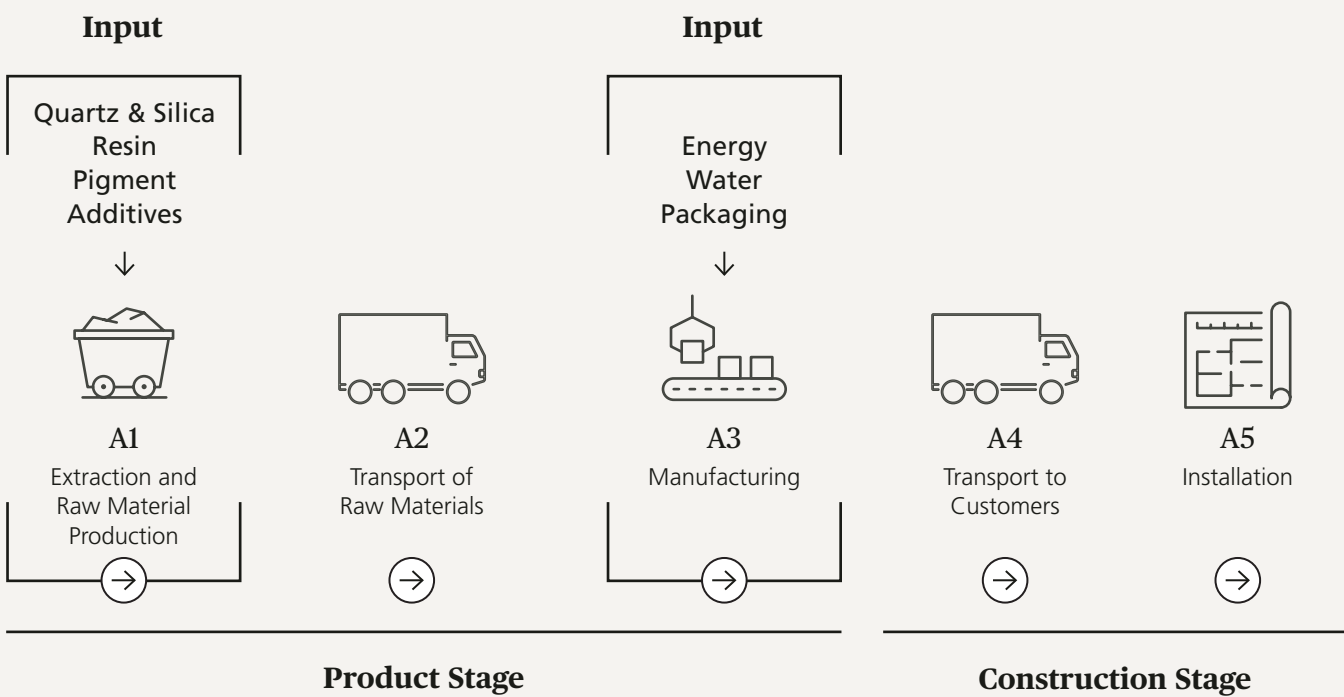
A3 Outputs			
	Site 3	Site 2	Site 1
Hazardous Bottles (recycling) (kg)	0.0003	0.0003	0.0003
Hazardous wipes (incineration) (kg)	0.000395	0.000395	0.0004
Metal from raw material packaging (kg)	0.000598	0.000598	0.0006
Cardboard and paper from raw material packaging (kg)	0.0004	0.0004	0.0004
Plastics from raw material packaging (kg)	0.0034	0.0034	0.0034
Sludge (kg)	0.000305	0.00025	0.0003053
PVA (kg)		0.0031	0.0031

Table 6 - A3 Outputs

Caesarstone uses water throughout the production process in a closed circuit, due to the presence of an on-site waste water treatment system. However, some of the water is lost in the “sludge” and is modeled within the material loss volume. Water treatment inputs are also included within A3 modeling.

In terms of electricity, the closest location and newest possible data sets on Ecoinvent were used.

System Diagram



A4 Models distribution to global customers as a weighted average, true to July-Nov 2023 data. Shipping data is unique for each model, and includes shipping to the following countries: Australia, USA, other areas (rest of the world), Israel, The UK, Canada, and Southeast Asia. Additionally, a distance of 1000 km was modeled – pertaining to travel distance from factory to closest port (by ship), from destined port to retail, and from retail to customer home (lorry).

A5 Includes the installation of the countertops in customer homes. As discussed with Caesarstone, the installation inputs and outputs are very low. The process that occurs here includes fabricators cutting the slab to sizes that meet specific customer needs (with machinery and electricity at very low input), and an adhesive/welding process that also uses very low input.

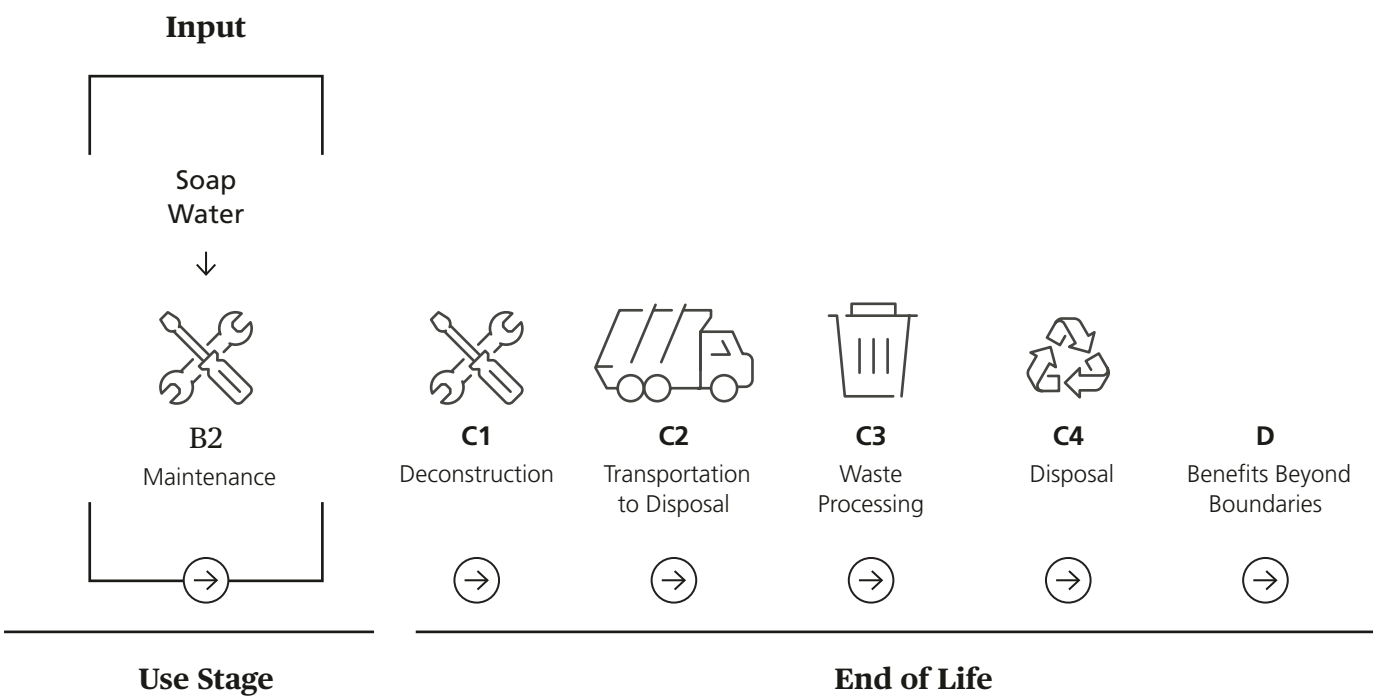
These processes occur at customer home/fabricator facilities and are considered to include very minor inputs and outputs.

For a full countertop, using a circular saw for half an hour would consume approximately 0.9 kwh. The total energy consumption during slab factory manufacturing totals 116 kwh. As such, the energy consumption under the installation phase falls under the cut-off criteria, as it is under 1% in relation to total product energy consumption.

Therefore, A5 does not depict energy use, depicting only the disposal of the product's packaging – in this case transport of nylon to recycling facility (cut-off method).

A5 - Installation	
Ancillary Materials for installation	0 kg - please see life cycle inventory area explaining negligence
Water use	0 m3 - please see life cycle inventory area explaining negligence
Other resources	0 kg - please see life cycle inventory area explaining negligence
Quantitive description of energy type	please see life cycle inventory area explaining negligence
Waste materials, before processing, generated during installation	0.08 (Site 3) / 0.0053 (Site 2, Site 1) kg of nylon, used in product packaging
Output materials as result of waste processing at building site	0.08 (Site 3) / 0.0053 (Site 2, Site 1) nylon are sent to incineration, transported via freight lorry, distance of 100km
Direct Emissions to air/soil	0 kg

Table 8 - A5 Installation



B2 Represents the customer maintenance phase. The phase was modeled to include a weekly washing of the surface with water and soap, over 75 years of customer use. The quantities chosen are: 0.0002 m3/year, and 0.05 kg soap/year for 75 years – divided by 1 kg – our declared unit. Regarding the customer use itself (known as B1), no specific inputs or outputs are needed for countertop use, as it is used as a surface. No inputs or outputs occur in B1.

Regarding stages B3, B4, B5 – the countertops' physical priorities such as hardness, resistance to scratching and stains make repair, replacement or rehabilitation of the countertop unnecessary. Therefore, B3, B4, B5 are not included in the studied modules.

Regarding energy and water use during operational use (B6, B7), there are no energy inputs as energy is not required for product use. Therefore, B6 is excluded from consideration for this study. Water use (B7) is considered during the maintenance stage, and therefore also not regarded within this study.

B2 - Maintenance	
Maintenance Process	Please see life cycle inventory - Module B2
Maintenance Cycle	75 years, weekly wash (52 weeks per year)
Ancillary Materials	3.75 kg (for entire RSL)
Waste Materials from Maintenance	0 Waste water produced, as used amounts are very small, and natural evaporation of water in air drying of counter
Net Fresh water consumption during maintenance	0.015 M3 (for entire RSL)
Energy Input	0

Table 9 - B2 Inputs and Outputs

C1 Process is considered to be 0. This is due to the dismantling of the product prior to transport and waste treatment. The dismantling of the surface can be considered negligible in input consumption, and is therefore 0. Additionally, the slab's life cycle is considered to be independent from the life cycle of the building.

C2 Models the transportation to landfill facility, with an average distance of 100 km.

C3 and C4 Model the treatment of the waste and disposal in sanitary landfills. As the slab is sent to a sanitary landfill, waste processing prior to/during this type of disposal is not known to occur, and is therefore marked as "0" in this study.

End of life	
Collection process specified by type	1 kg collected with mixed construction waste
Recovery System	0 kg (for reuse, recycling, recovery)
Disposal specified by type	1 kg sanitary landfill, inert waste
Assumption for scenario development	Transportation modeled as 100km distance, via freight lorry

Table 10 - C3+C4 Inputs and Outputs

D Module D represents benefits from waste treatments occurring in researched scenarios and beyond study boundaries. As the countertops are currently fully treated by landfills, there are no end-of-life recycling/reusing benefits that can currently be reported. No benefits and loads exist outside the system boundary, and therefore model D value is 0 throughout the result charts.



More
Information

Allocation

The study uses a mass allocation method, meaning the calculation of inputs and outputs is based on the percentage of product out of total production, in weight. The allocation method used in this study for all data sets is the "cut-off" method. Regarding end-of-life, this method does not include recycling burdens, but rather only transportation to recycling facilities, as it considers recycling burdens and credit to be a part of the "second" product produced from recycled material. The declared unit for this study is one kilogram as guided by the PCR. No co-product is created during the creation of the Caesarstone slab. During the production, "sludge", which is a mixture of water and grounded slab material, is produced. However, in Strategic Partners facilities this is not a co-product but only a waste output that undergoes waste treatment.

Data Assumptions

A data quality assessment was found to be satisfactory as outlined in the table below. Data for each of the model stages was received directly from Caesarstone, and represents current production and distribution processes in the Caesarstone site. Data given represents Caesarstone's three sites, from July to November 2023.

Regarding A1, for a small number of substances there is use of generic LCA data sets. These substances include Peroxide master item and Silan master item. The chosen data sets represent the closest found data sets and should accurately depict these processes and materials.

Regarding A5, the installation phase was discussed with Caesarstone, and models only the packaging waste. More information can be found in the inventory section below. The maintenance stage includes countertop washing.

As this is under customer use, and Caesarstone did not divulge any specific information regarding this treatment, the data modeled is based on a an EPD from a Cosentino surface published in 2019. Cosentino's study modeled one weekly cleaning, with a certain amount of soap and water. The model pertains to 75 years of use and thus was calculated in accordance with this data. The full process descriptions are found within the annexes.

To measure the distances for transportation of raw materials to each facility (site 1, site 2), the model depicts the shipping distance between the most probable port in each manufacturing country to the most probable and close port in the recipient country. In site 3 (China), shipping was not needed as most raw materials were produced in China, and transportation is depicted via freight train.

For measure of transport to customers, a weighted average based on sales data was calculated. Besides shipping, the model depicts a 1000 km of lorry road transport that includes: transport of product from factory to port, transport from destination port to retail, and transport from retail to customer.

For measure of transportation distance at end-of-life, a 100 kilometer distance from customer home to the landfill facility was used.

* Dekton, EPD N°. S-P-00916 – version 2 Publication date: 01/10/2016

Assumptions and Limitations

A2 Transport of Raw Materials

Raw material production locations are based on locations of the largest suppliers of each material.

A3 Manufacturing

Energy Consumption: The energy in this stage includes electricity, used from Israel's grid, at 0.506 kwh per one declared unit. The data set used to represent the electricity mix is an adapted ecoinvent data set, representing Israel's grid mix from 2020. LPG in A3 includes 0.111 kg for the production of one declared unit. Diesel is used for factory forklifts at an amount of 0.00000069 m3 per one declared unit.

Water Consumption and Waste Water: Caesarstone uses water throughout a closed circuit production process, using an on-site waste water treatment system. Therefore, only 0.3% of yearly water is lost throughout the process.

A4 Transport to customers

Models distribution to global customers as a weighted average, true to data from July-November 2023. Additionally, a distance of 1000 km was modeled pertaining to distance from Bar Lev to Ashdod port (by ship), travel from destined port to retail, and retail to customer home (lorry).

A5 Installation

Includes countertop installation in customer homes. As discussed with Caesarstone, the installation inputs and outputs are very low. The process includes fabricators cutting the slab to specific sizes in accordance with customer needs (with low input machinery and electricity), and an adhesive/ welding process that also uses very low input. These processes, which occur at customer homes/ fabricator facilities, are thought to include very minor inputs and outputs. For a full countertop, using a circular saw for half an hour would consume approximately 0.9 kwh. The total energy consumption during slab factory manufacturing totals 116 kwh. As such, the energy consumption under the installation phase falls under the cut-off criteria, as it is under 1% in relation to total product energy consumption.

Therefore, A5 does not depict energy use, depicting only the disposal of product packaging

– in this case transport of nylon to recycling facility (cut-off method).

B2 Maintenance

This phase was modeled to include a weekly surface washing with water and soap, over 75 years of customer use. The chosen quantities are: 0.0002 m3/year, and 0.05 Kg soap/ year for 75 years – divided by 1 kg – our declared unit. This translates to 0.015 kg of soap per lifetime and 6.024E-5 m3 of water per lifetime. No waste water is modeled, as the water used in this phase evaporates.

C1 Dismantling

Product dismantling is manual, with no material or energy inputs needed for this stage. Therefore, dismantling is excluded from this study.

C3 Waste processing

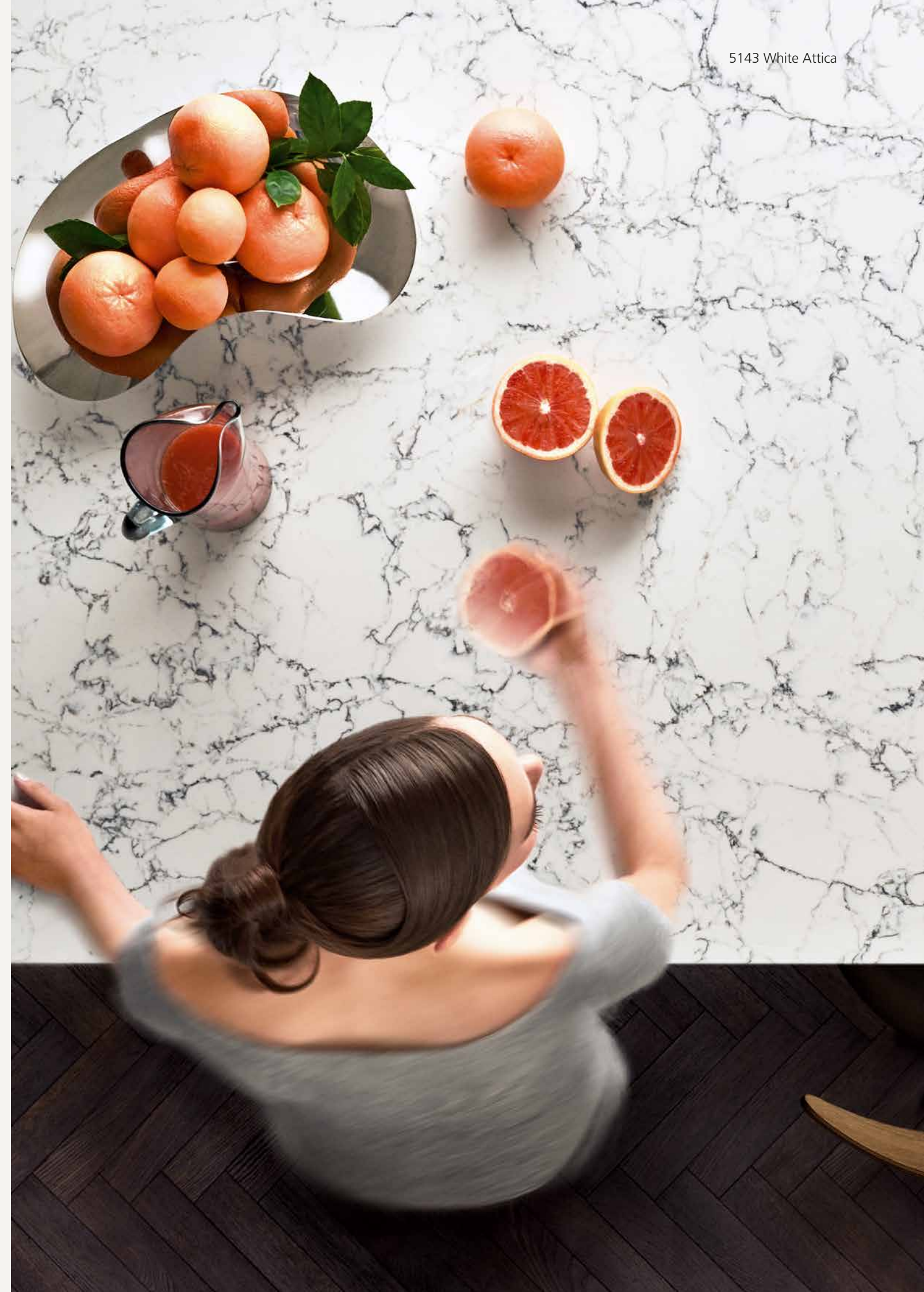
It is assumed that landfill waste does not include substantial processing involving energy or material inputs, which are not already modeled within the C4 ecoinvent process.

D End of life Benefits beyond boundaries

As the countertops are currently fully treated by landfill, there are no recycling / reusing benefits at end-of-life that can currently be reported.

Results

Additional indicators and resource use are calculated based on option B proposed by the PRC.



Data Quality Assessment and Basic Uncertainty Analysis

Indicator	A1	A2
Temporal Representativeness	Very Good	Very Good
Geographical Representativeness	Good	Very Good
Technical Representativeness	Good	Very Good

Table 11 - Data Quality Assessment A1-2

Indicator	A3	A4	A5
Temporal Representativeness	Very Good	Very Good	Very Good
Geographical Representativeness	Very Good	Good	Very Good
Technical Representativeness	Very Good	Very Good	Very Good

Table 12 - Data Quality Assessment A3-5

Indicator	B2	C2	C4	D
Temporal Representativeness	Very Good	Very Good	Very Good	Very Good
Geographical Representativeness	Good	Good	Good	Good
Technical Representativeness	Very Good	Very Good	Very Good	Very Good

Table 13 - Data Quality Assessment B-D

All data adheres to the following:

- a) Age < 10 years for generic data
- b) Age < 5 years for specific data
- c) Specific data based on 1-year average (unless deviations are justified)
- d) Time period of 100 years, in case of a landfill scenario: longer if relevant
- e) Complies with physical reality of the product as far as possible, in terms of geographical and technological coverage

* Dekton, EPD N°. S-P-00916 – version 2 Publication date: 01/10/2016

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

Module	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Int	Int	Israel	Int	Int	Int	Int							Int		Int	
Specific data used	13% (A1-A3)					-	-	-	-	-	-	-	-	-	-		-
Variation – products	-31 / +22%					-	-	-	-	-	-	-	-	-	-		-
Variation – sites	Marudhar: -33% from Avg Fasa: +25% from Avg Casla: -4% from Avg					-	-	-	-	-	-	-	-	-	-		-

Results of the environmental performance indicators

Indicators with More than 10% Variation Between Lowest and Highest Impacting Models			
Damage category	Unit	Variation from best	Variation from worst
Acidification	mol H+ eq	-54%	36%
Climate change	kg CO2 eq	-32%	22%
Ecotoxicity, freshwater	CTUe	-23%	15%
Particulate matter	disease inc.	-25%	19%
Eutrophication, marine	kg N eq	-53%	36%
Eutrophication, freshwater	kg P eq	-1.4%	2%
Eutrophication, terrestrial	mol N eq	-63%	38%
Human toxicity, cancer	CTUh	-32%	21%
Human toxicity, non-cancer	CTUh	-30%	20%
Ionising radiation*	kBq U-235 eq	-29%	24%
Land use	Pt	-23%	21%
Ozone depletion	kg CFC11 eq	-23%	17%
Photochemical ozone formation	kg NMVOC eq	-59%	35%
Resource use, fossils	MJ	-31%	21%
Resource use, minerals and metals	kg Sb eq	-38%	46%
Water use	m3 depriv.	-13%	15%
Climate change - Biogenic	kg CO2 eq	14%	-16%
Climate change - Fossil	kg CO2 eq	-32%	22%
Climate change - Land use and LU change	kg CO2 eq	-1%	1%
GWP100	kg CO2-eq	-31%	22%

Mandatory impact category indicators according to EN 15804

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-biogenic	kg CO2 eq.	2.20E-03	3.65E-05	1.20E-06	0	0	6.48E-06	0	4.02E-04	0
GWP-fossil	kg CO2 eq.	1.56E+00	3.29E-01	1.52E-02	2.78E-02	0	1.92E-02	0	1.17E-02	0
GWP-luluc	kg CO2 eq.	1.01E-03	2.05E-04	1.77E-07	4.81E-02	0	9.90E-06	0	8.58E-06	0
GWP-total	kg CO2 eq.	1.57E+00	3.29E-01	1.52E-02	0	0	1.92E-02	0	0	0
GWP-GHG	kg CO2 eq.	1.57E+00	3.29E-01	1.52E-02	7.90E-02	0	1.92E-02	0	1.18E-02	0
ODP	kg CFC 11 eq.	7.98E-08	4.94E-09	1.73E-11	1.24E-09	0	2.87E-10	0	2.75E-10	0
AP	mol H+ eq.	7.42E-03	4.76E-03	3.86E-06	3.16E-04	0	6.80E-05	0	8.35E-05	0
EP-freshwater	kg P eq.	3.92E-05	2.36E-06	5.37E-09	5.10E-04	0	1.82E-07	0	1.69E-07	0
EP- Marine	kg N eq.	1.56E-03	1.24E-03	1.76E-06	3.60E-04	0	2.21E-05	0	3.09E-05	0
EP-terrestrial	mol N eq.	1.62E-02	1.36E-02	1.82E-05	1.16E-03	0	2.37E-04	0	3.34E-04	0
POCP	kg NMVOC eq.	6.25E-03	3.96E-03	4.78E-06	1.98E-04	0	9.15E-05	0	1.13E-04	0
ADP-minerals & metals*	kg Sb eq.	7.35E-06	7.46E-07	1.11E-09	2.79E-07	0	6.14E-08	0	2.37E-08	0
ADP-fossil*	MJ	2.52E+01	4.38E+00	4.48E-03	2.93E-01	0	2.70E-01	0	2.54E-01	0
WDP*	m³	8.10E-01	1.57E-02	6.90E-04	5.52E-02	0	1.20E-03	0	1.07E-02	0
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

**The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks

***the use of the results of modules A1-A3 (A1-A5 for services) without considering the results of module C should be taken only under careful consideration.

Other Environmental Performance Indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Particulate matter	disease inc.	9.53E-08	1.92E-08	5.37E-09	5.05E-09	0	1.52E-09	0	1.80E-09	0
Ionising radiation	kBq U-235 eq	2.10E-02	1.30E-03	2.72E-06	6.02E-04	0	9.56E-05	0	1.28E-04	0
Ecotoxicity, freshwater	CTUe	2.21E+01	2.34E+00	3.07E-02	3.46E+00	0	1.51E-01	0	1.12E-01	0
Human toxicity, cancer	CTUh	7.78E-10	1.46E-10	1.37E-12	6.23E-11	0	8.69E-12	0	6.68E-12	0
Human toxicity, non-cancer	CTUh	1.41E-08	2.42E-09	4.75E-11	1.41E-09	0	1.94E-10	0	7.38E-11	0
Land use	Pt	7.41E+00	1.74E+00	1.85E-03	2.80E+00	0	1.61E-01	0	5.80E-01	0

Additional Indicators

Indicator	Sub-indicator	Unit	Total	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
Use of renewable primary energy	Excluding renewable primary energy resources used as raw materials	MJ	2.59E+00	7.65E-01	6.79E-02	3.32E-01	4.62E-02	1.36E-04	1.37E+00	0	3.44E-03	0	4.32E-03	0
	Renewable primary energy resources used as raw materials	MJ	3.09E-02	3.09E-02	0	0	0	0	0	0	0	0	0	0
	Total	MJ	2.62E+00	7.95E-01	6.79E-02	3.32E-01	4.62E-02	1.36E-04	1.37E+00	0	3.44E-03	0	4.32E-03	0
Use of non-renewable primary energy	Excluding non-renewable primary energy resources used as raw materials	MJ	2.68E+01	1.42E+01	4.88E+00	2.72E+00	4.38E+00	4.49E-03	7.39E-02	0	2.71E-01	0	2.54E-01	0
	Non-renewable primary energy resources used as raw materials	MJ	3.47E+00	2.93E+00	0	2.77E-01	0	0	2.71E-01	0	0	0	0	0
	Total	MJ	3.02E+01	1.71E+01	4.88E+00	3.00E+00	4.38E+00	4.49E-03	3.45E-01	0	2.71E-01	0	2.54E-01	0
Use of secondary material		kg	9.44E-02	9.44E-02	0	0	0	0	0	0	0	0	0	0
Use of renewable secondary fuels		MJ	0	0	0	0	0	0	0	0	0	0	0	0
Use of non-renewables as secondary fuels		MJ	0	0	0	0	0	0	0	0	0	0	0	0
Net use of freshwater		m³	8.93E-01	6.98E-01	2.21E-02	8.93E-02	1.57E-02	6.90E-04	5.52E-02	0	1.20E-03	0	1.07E-02	0

Indicator	Unit	Total	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
Hazardous waste disposed of	Kg	8.95E-05	2.44E-05	3.11E-05	3.45E-06	2.57E-05	2.78E-08	1.58E-06	0	1.74E-06	0	1.26E-06	0
Non hazardous waste disposed of	Kg	1.65E+00	2.38E-01	2.30E-01	1.12E-02	1.35E-01	3.57E-04	1.54E-02	0	1.31E-02	0	1.00E+00	0
Radioactive waste disposed of	Kg	1.55E-05	9.95E-06	1.06E-06	3.19E-06	7.31E-07	1.75E-09	3.92E-07	0	5.48E-08	0	7.79E-08	0

Indicator	Unit	Total	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
Components of reuse	Kg	0	0	0	0	0	0	0	0	0	0	0	0
Materials for recycling	Kg	0	0	0	6.66E-03	0	6.32E-03	0	0	0	0	0	0
Exported energy - MJ	MJ	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
7.2.5 information on biogenic content		0	0	0	0	0	0	0	0	0	0	0	0

Indicator	Unit	Total	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
Biogenic carbon content	Kg	0	0	0	0	0	0	0	0	0	0	0	0
Biogenic carbon content in accompanying packaging	Kg	0	0	0	0	0	0	0	0	0	0	0	0

*Conversion factor used from biogenic carbon to KG Co2: 3.67

References

General Programme Instructions of the International EPD® System. Version 4.0.

PCR – Construction products 2019 1.3.4

EN 15804:2012+A2:2019, Sustainability of construction works - Environmental

Product Declarations – Core rules for the product category of construction products

EN ISO 14040:2006. Environmental management. Life cycle analysis. Principles and frame of reference.

EN ISO 14025:2010. Labels and environmental declarations Type III environmental declarations. Principles and procedures.

ShunTool. (n.d.). Understanding the power consumption of a 10 amp saw. Retrieved December 5, 2024, from <https://shunttool.com>

Home Efficiency Guide. (n.d.). How much electricity does a circular saw use? Retrieved December 5, 2024, from <https://homeefficiencyguide.com>

Topić Božič, J., Fric, U., Čikić, A., & Muhič, S. (2024). Life cycle assessment of using firewood and wood pellets in Slovenia as two primary wood-based heating systems and their environmental impact. Sustainability, 16(4), 1687. H

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