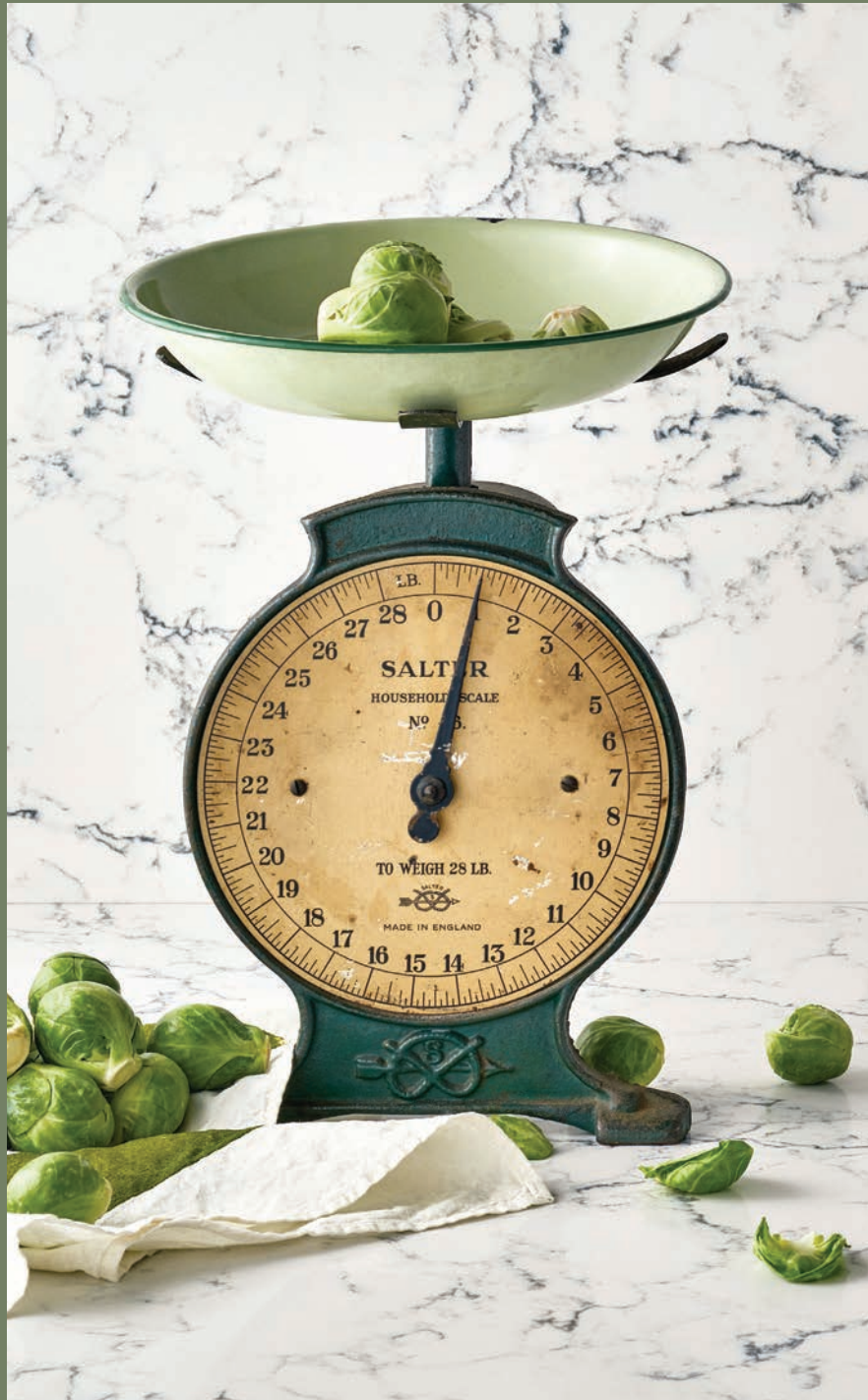


Environmental Product Declaration

Caesarstone ICON™

Advanced fusion surfaces by strategic partners



5131 Calacatta Nuvo



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

**Caesarstone ICON™
advanced fusion surfaces
by strategic partners**

from Caesarstone Ltd.

EPD of multiple products,
based on average results

Product

4001 Fresh Concrete
5131 Calacatta Nuvo
5141 Frosty Carrina
5143 White Attica
5151 Empira White
1141 Pure White
4600 Organic White
2141 Blizzard / Snow
3141 Egg Shell / Osprey
6011 Intense White
6141 Ocean Foam

Programme

The International EPD® System,
www.environdec.com

Programme operator

EPD International AB

EPD registration number

EPD-IES-0022353

Publication date

21-05-2025

Valid until

20-05-2030

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 follow-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.



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.

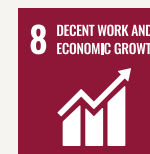
These global goals were established in 2015 as part of the 2030 Agenda for sustainable development, and are designed to achieve a better and more sustainable future for all. The 17 SDGs cover the world's most pressing social, environmental, health, and economic issues, with specific targets for each.

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 contribute 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](#)

Make an *iconic* choice for the future



Caesarstone continues to pioneer the industry with groundbreaking innovation. Bring your personal style to life with creations that are both stunning and responsible.



Nurture your space with *recycled material* surfaces

Our advanced fusion surfaces are made with ~80% recycled materials, including high-quality post-industrial recycled glass, setting a new standard for sustainability.



A safer industry with crystalline silica-free surfaces

Thanks to state-of-the-art technologies, our crystalline silica-free* fusion surfaces adhere to Caesarstone's highest fabrication standards, surpassing rigorous industry and safety tests.



Caesarstone's signature quality meets *iconic design*

With innovative characteristics, our new premium surfaces allow for the optimisation of design possibilities, demonstrating never before seen depth and transparency.



caesarstone® ICON
Advanced Fusion Surfaces

* May contain traces of crystalline silica of up to 1%.

Product Information



Product Information

Product Name
Strategic partners 11 products, engineered stone countertops from the following sites: (site 2, site 1)

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 two facilities around the world.

- Site 1 - Vietnam
- Site 2 - China

For raw material production the largest suppliers were calculated, located in countries such as; China, India, Australia, Vietnam, South Korea, Singapore and a few raw materials imported from Netherlands and EU countries. Regarding customer use, all model's transport to customers distance is the same, as all products were sold to one sole location, Australia.

Target Audience
B2B

Product Identification

Site 2	Site 1
1141	4001
4600	5141
2141	5143
3141	5151
6011	5131
6141	

Table 1 - Product Identification

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 as the life cycle of the slab is independent of the life of the building. See content information table for the materials composing the different products. The declared unit also includes the product packaging, which includes a nylon wrapping.

Representation of Models

11 models of ICON Caesarstone countertops are represented in this study. These 11 models contain similar raw materials with slight variations, please see raw material table above. The PCR of construction products 1.3.4 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 variations GWP result in the models vary by more than 10%. However, their grouping can be justified, as all models belong to the same commercial collection the “ICON” counter tops¹. All models use the same raw materials (with variations in percents as seen later on in content table), undergo the same production process and use the same equipment. The production of these 11 products occur in two facilities located in Asia.

A full slab, can range from 233 kg to 275 kg. As such the declared unit in this study is 1 kg of each slab, in order to not be affected by weight change due to product size, but rather only components. Below in content information, please find a table with full weight and size of each product.

No weighting of data from various locations was practiced in this research. The LCA analysed each site, and each model created in that site, on its own, including the different site production, and different sale amount and location to customers.

Reference service life

75 years as seen in product declaration²

Time representativeness

Data was collected for January to May 2024.

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 production of product, distribution, transport, customer use, and end of life technology true to two strategic business partners factories production for the year of January to May 2024.. Only half a year was represented in the study, 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 system model of cut off is chosen. Specifically, for A5 – customer maintenance, a reference of quantities for auxiliary materials was extracted from an EPD of 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 costumers, 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

² As written in product declaration

Content Information

Product components	Range of % in product	Avg in Product	Biogenic Material, weight % of product	Biogenic material, kg C/ product
Glass	84-87	85.8%	0%	0
Resin	11.8-14	12.8%	0%	0
Styrene monomer	0.97-1.02	1.0%	0%	0
titanium oxide	0.56-3.30	1.2%	0%	0
Titanium chemours	0.48-1.16	0.7%	0%	0
Coupling agent	0.17-0.22	0.2%	0%	0
Curing Agent	0.12-0.15	0.1%	0%	0
Iron oxide	0-0.42	0.1%	0%	0
cobalt	0-0.1	0.1%	0%	0
Color Pigment	0-0	0.0%	0%	0
Packaging Material	Weight,kg	Weight % vs the product	Biogenic Material, kg/c	-
Nylon	0.00474 (site 2) 0.00174 (site 1 and Marudhar)	0.47% site 2, 0.17% site 1 and Marudhar	0	-

Table 2 - Content Information
*Conversion factor used from biogenic carbon to kg Co2: 3.67

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

Site 1

Model Number	Weight of 1 Slab (kg)	Size (length (m) X width (m) X thickness (mm))
4001	275	3300x1650x20
5141	253	3300x1650x20
5143	252	3300x1650x20
5151	267	3300x1650x20
5131	261	3300x1650x20

Table 3 - Slab sizes Site 1

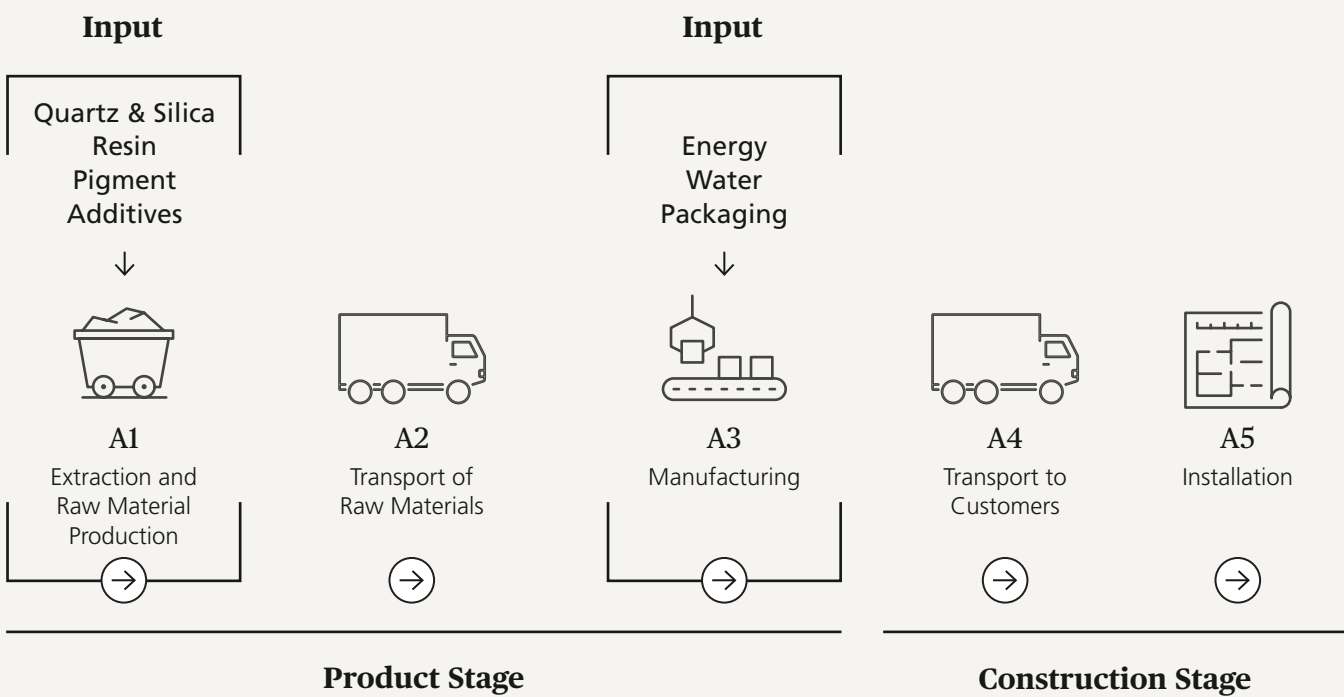
Site 2

Model Number	Weight of 1 Slab (kg)	Size (length (m) X width (m) X thickness (mm))
1141	233	3240*1640*20
4600	235	3240*1640*20
2141	235	3240*1640*20
3141	238	3240*1640*20
6011	235	3240*1640*20
6141	240	3240*1640*20

Table 4 - Slab sizes Site 2

Table - Full weight of finished products - standard size

System Diagram



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 costumers, 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.

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 Netherlands and EU countries. Additionally, for each of the sites amount of plastic and metal used in packaging of raw materials, was added, and depicted as waste flows later on in A3. The Vietnamese site, was the only factory that knew their numbers for this information (do to variations in legislation between countries) and so these numbers are also used in China's site models to represent their raw material packaging. Also, worth mentioning: Site 2 use 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 ovens. However Site 1 does not use Kraft paper but rather uses 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 each facility closest port and to 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 1.23 kg- 1.40 kg.

A3 Includes the production of the countertops, in each facility. A3 also includes transport to recycling of nylon and transport of metal to reuse. The manufacturing of the product includes the

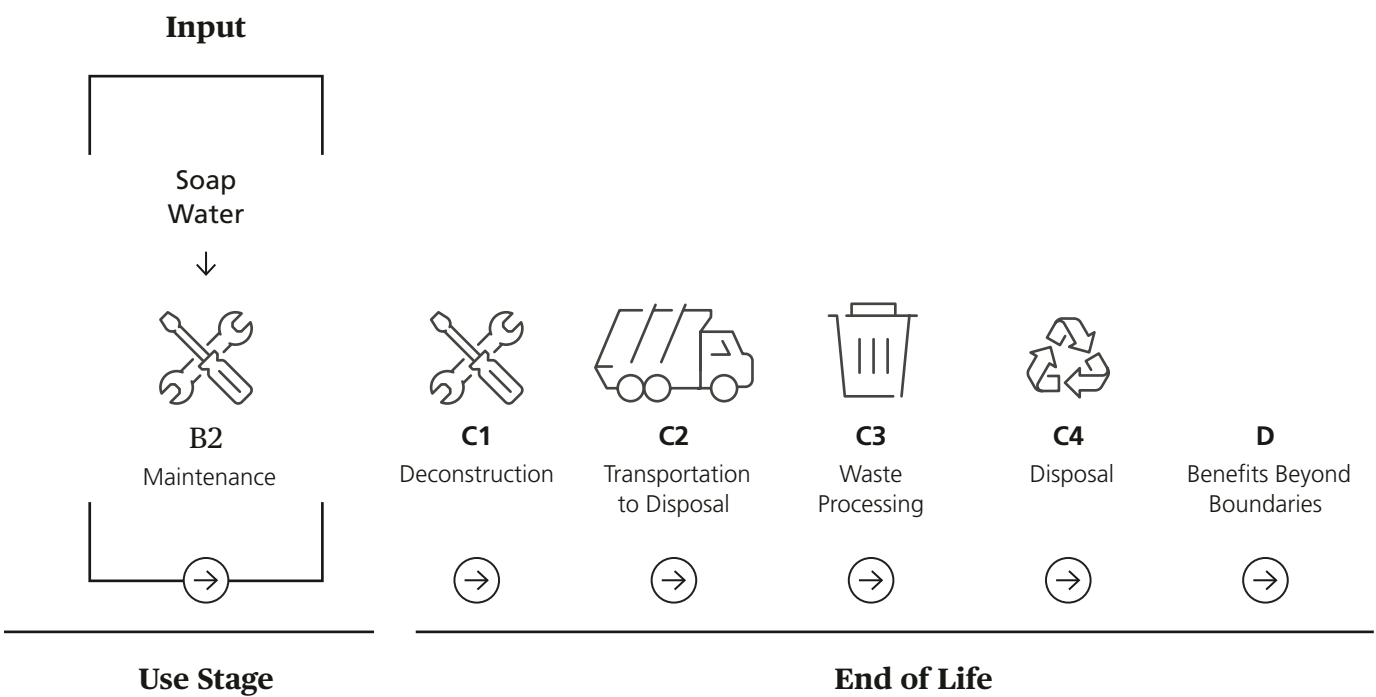
following phases: Transport to Silos of raw materials to silos, Liquid Mixing, Mixer of other raw materials, Portion divider, Injecting of color pattern (in specific models), Presser, over, cooling conveyer belt, calibration of the product and cutting of PVA/Kraft paper,calibration, polishing, wrapping in nylon packaging, storage. Additionally all sites have a water treatment facility on site – allowing fo a closed water circuite and reuse of water throughout the process.

The following table includes A3 inputs and Out puts in each site:

A3 Inputs		
Inputs	Site 2	Site 1
Electricity (KWh)	0.2736	0.2686
Natural gas (kg)	-	0.0074
Diesel (liter)	0.0003	0.0019
Acetone (kg)	0.0018	0.0036
Nylon for packaging kg	0.0047	0.0017
PVA film for production (kg)	-	0.0014
Water (kg)	1.3	0.64

Table 5 - A3 inputs

In reference to A3, three aspects are worth mentioning; The first, in all due to data availability at Caesarstone, 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 over the whole manufacturing process, however there is no internal division of different stages/machines with the manufacturing process.



Waste flows (apart from material loss) are based on site 1 information (as site 2 had no collection of waste flows on site) and include: Raw material packaging plastic and metal, PVA nylon (site 1 only), Hazardous waste bottles and wipes.

Secondly, the current manufacturing of the product includes material loss. The raw material of the input totals vary by models, however the lightest in-put is 1.23 kg, and the heaviest is 1.40 kg. the finalized product weighs 1 kg. 23-40% material loss in the production process. Material loss is depicted in the model as waste flow – passed to recycling and to reuse. A3 Models hazardous waste treated in incineration (based on site 1 data). The sludge is created due to material loss throughout the process, which occurs mostly in the calibration and smoothing out of the slabs. For full amount of material loss please see recipe annex.

Caesarstone use water over the production process in a closed circuit, as they have a waste water treatment system on site. However some of the water is lost is the material loss “sludge” and is modeled within the material loss volume. Water treatment inputs are also included within the modeling of A3.

Material - Outputs	Site 2	Site 1
Hazardous Bottles (Recycling) (kg)	0.0003	0.0003
Hazardous wipes (incineration) (kg)	0.0004	0.0004
Metal from raw material packaging (kg)	0.0006	0.0006
Cardboard and Paper from Raw Material Packaging (kg)	0.0004	0.0004
Plastics from Raw Material Packaging (kg)	0.003435	0.003435
Sludge (kg)	0.288	0.27
PVA (kg)	-	0.0038
Kraft Paper	0.00354	-

Table 6 - A3 Out puts

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

Site 1	Electricity, medium voltage {VN} market for electricity, medium voltage	Cut off, U
Site 2	Electricity, medium voltage {CGN} market for electricity, medium voltage	Cut off, U

Table 6: Electricity Data sets

Damage category	Unit	Site 2	Site 1
GWP100	kg CO ₂ -eq/kwh	0.625	0.676

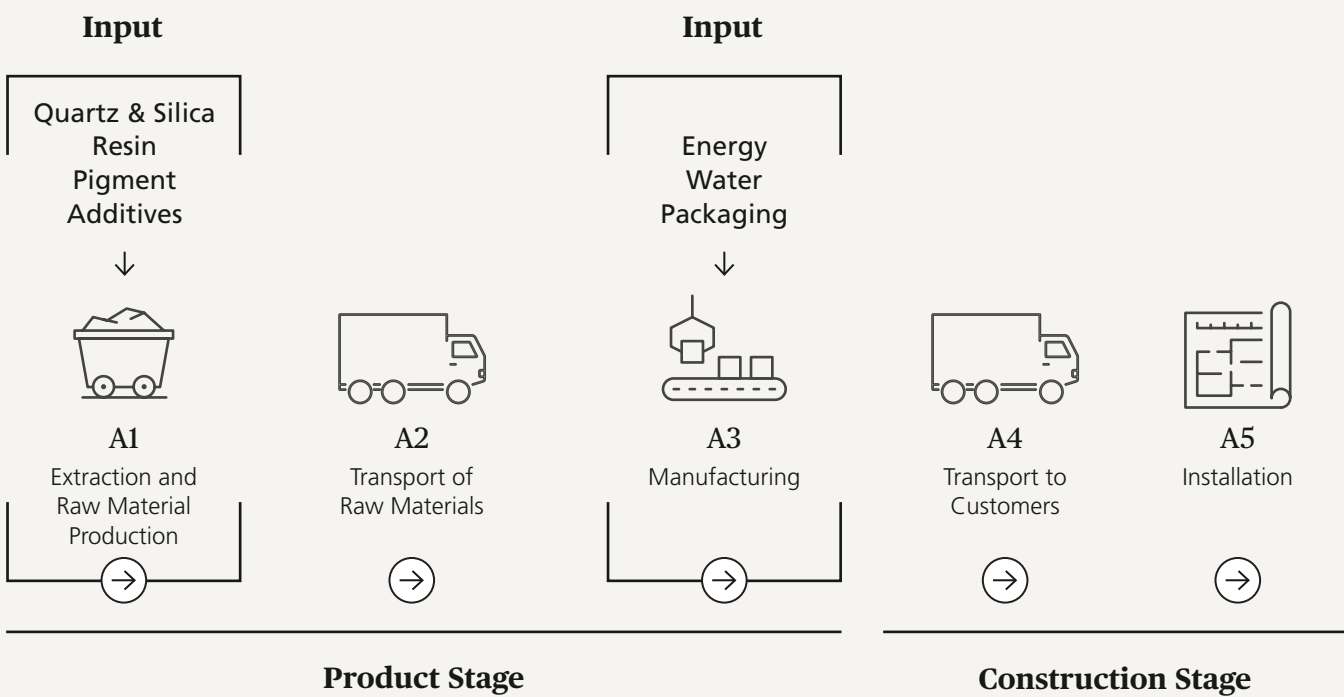
Table 7 Electricity GWP -GHG impact

A4 Models distribution is true to Jan-May 2024 data. Shipping for all models was solely to Australia, modeled to Darwin port. Additionally, a distance of 1000 km by road via lorry was modeled - pertaining to distance of factory to port, from destined port to retail, and retail to customer home. Please see ship distance in table below.

Shipping distance	
Australia (Darwin Port)	
Site 1 (Saigon Port) (NM)	2784
Site 2 (Foshan Port) (NM)	3085

Table 8 - Distance (port to port) for Transport to Customer

System Diagram



A5 Includes installation of the countertops in customer homes. As discussed with Caesarstone the installation inputs and outputs are very low. The process which occurs here includes fabricators cutting the slab to the specific size of customer needs (with machinery and electricity at very low input), and a type of adhesive/welding process which also occurs using very low input. These processes occur at customer home/fabricator facilities and thought to include very minor inputs and outputs. For a full countertop, using a circular saw for half an hour of use would consume approximately 0.9 KWH. The total energy consumption during the slab factory manufacturing, totals to 116 kwh. As such, we can see 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 the A5 does not depict energy use, and depicts only the disposal of the packaging in which the product arrived, in this case - transport of nylon to recycling facility (cut off method).

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.

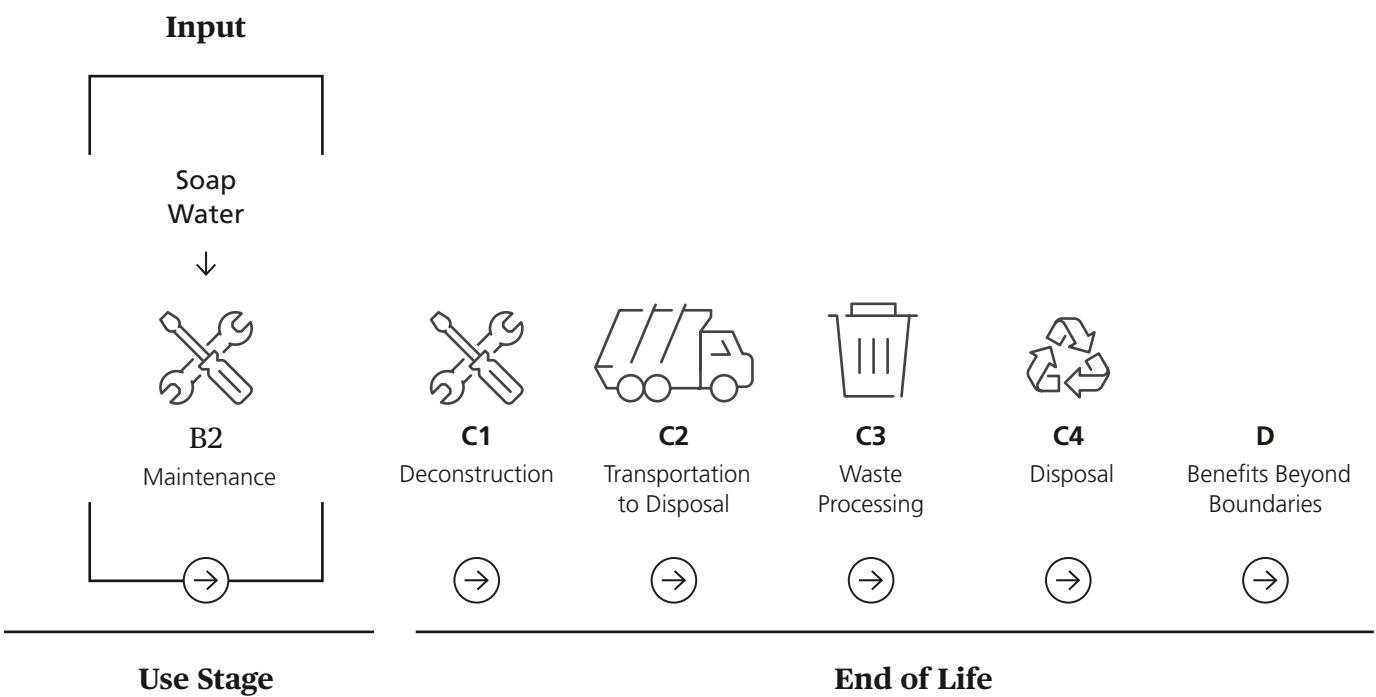
Regarding the customer use itself known as B1, no specific inputs or out puts are needed for use of the countertop, as it used as a surface. No inputs or out puts occur in B1 and therefore it is not part of the study scope.

Regarding stages B3, B4, B5 – the countertops's physical priorities such as hardness, resistance to scratching and stains make repair, replacement or rehabilitation of the countertop unnecessary. Due to this B3,4,5 are not included in studied modules.

Regarding energy and water use in the 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 therefor also not regarded within this study.

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	Site 2- 0.0047, site 1- 0.0017 -Nylon used in product packaging, sent to incineration off site
Direct Emissions to air/soil	0 kg

Table 9 - A5 Installation



B2 - Maintenance	
Maintenance Process	Please see life cycle inventory - Module B2
Maintenance CyCLE	75 YEARS, WEEKLY WASH (52 PER YEAR)
Ancillary Materials	3.75 kg (for entirl 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 during maintenance	0.015 m3 (entire RSL)
Energy input	0

Table 10 - B2 Inputs and Outputs

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

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

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

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

Table 11 - C3+C4 Inputs and Outputs

D Module D represents benefits from waste treatments occurring in researched scenario and beyond study boundaries. As the countertops are currently fully treated by landfill, there is no recycling/ reusing benefit at end of life 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.Full process descriptions exist in Annex.

A-D does not include calculation of capital goods.



More
Information

Allocation

The study uses mass allocation method. Meaning the calculation of inputs and out puts is based on 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 burdens of the recycling, but rather only transportation to recycling facilities, as it considers the burdens and credit of recycling to 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 business partners facilities this is not a co product but only a waste out-put which 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 Caesarstone site. Data given represents Caesarstone two sites, January to May 2024.

Regarding A1 For a small number of substances, there is use of generic LCA data sets. These substances include; Peroxide master item, Silan master item. The chosen data sets represent 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 on this can be found within the inventory section below.

In B2, the Maintenance stage includes washing of the countertops. As this is under customer personal maintenance use, and there was no specific information on this treatment from Caesarstone, 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. The full process descriptions are found within the annexes.

For measure of distances for transportation of raw materials to site 1, the model depicts the shipping distance between the most probable port in each manufacturing country to saigon port. In site 2, China's case most raw material were produced in China themselves, so shipping s not needed, and there transported is depicted via freight train.

For measure of transport to customers, a weighted average based on sales data was calculated. Besides the shipping, the model depicts a 1000 km of lorry road transport which 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 the end of life, the distance from the customer home to the Landfill facility a distance of 100 Kilometer 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

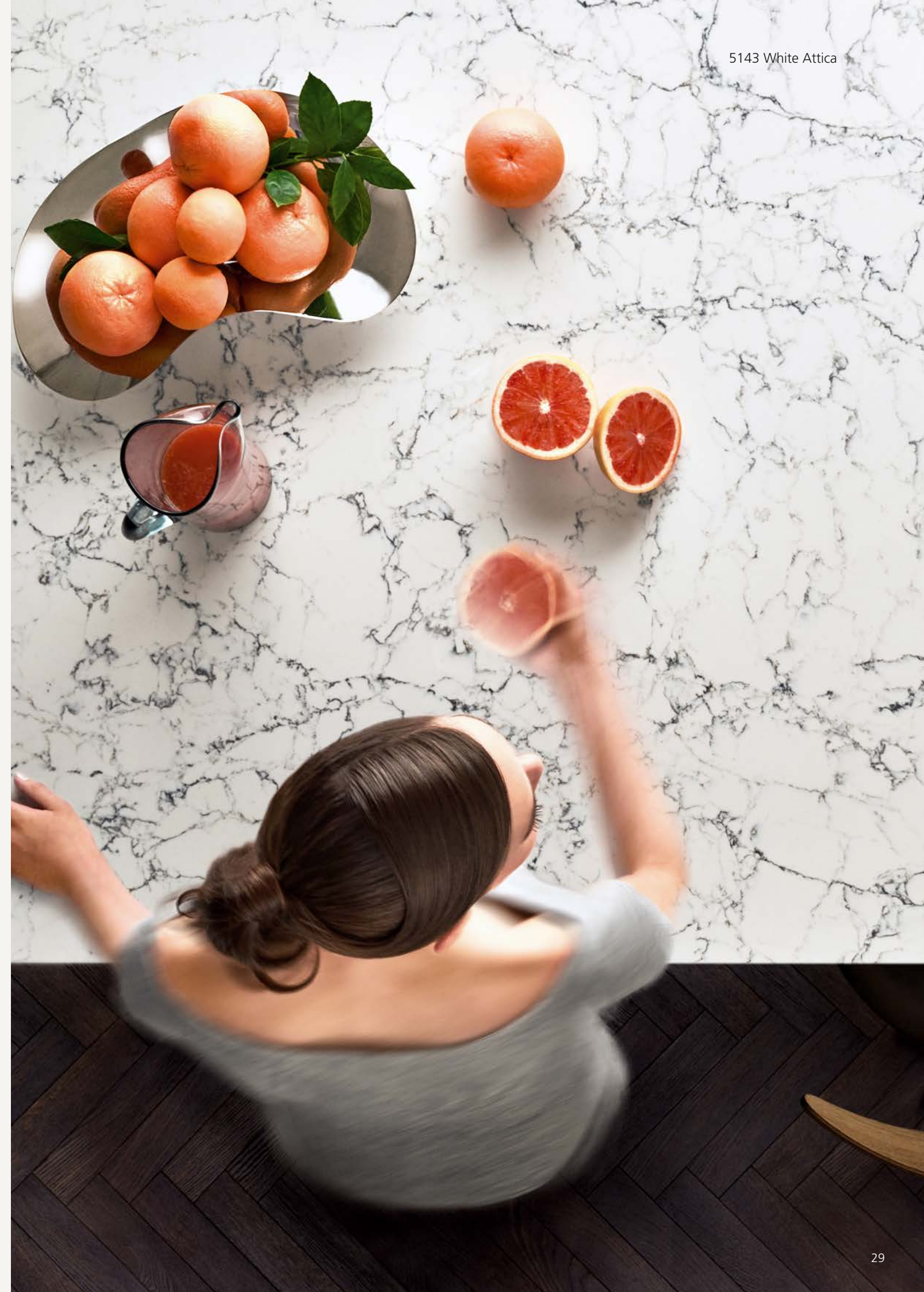
It is assumed that landfill waste does not include substantial processing involving energy or material inputs, which are not already modeled within the C4 ecoinvent process.

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 12 - 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 13 - 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 14 - 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	ND	X	ND	ND	ND	ND	ND	x	X	x	X	X
Geography	Int	Int	Israel	AU	AU	-	AU							AU		AU	
Specific data used	0.7% (A1-A3)					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-11/6%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	1.52%					-	-	-	-	-	-	-	-	-	-	-	-

Table 15 - Modules declared, geographical scope, share of specific data

Results of the environmental performance indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-biogenic	kg CO ₂ eq.	1.30E-02	5.33E-05	6.36E-07	-3.95E-02	0.00E+00	6.48E-06	0.00E+00	9.50E-05	0.00E+00
GWP-fossil	kg CO ₂ eq.	1.28E+00	2.48E-01	8.04E-03	2.78E-02	0.00E+00	1.92E-02	0.00E+00	1.17E-02	0.00E+00
GWP- luluc	kg CO ₂ eq.	8.30E-04	1.42E-04	9.36E-08	4.81E-02	0.00E+00	9.90E-06	0.00E+00	8.58E-06	0.00E+00
GWP-total	kg CO ₂ eq.	1.29E+00	2.48E-01	8.04E-03	3.64E-02	0.00E+00	1.92E-02	0.00E+00	1.18E-02	0.00E+00
GWP - GHG	kg CO ₂ eq.	1.29E+00	2.48E-01	8.04E-03	7.90E-02	0.00E+00	1.92E-02	0.00E+00	1.18E-02	0.00E+00
ODP	kg CFC 11 eq.	8.05E-08	3.71E-09	9.16E-12	1.24E-09	0.00E+00	2.87E-10	0.00E+00	2.75E-10	0.00E+00
AP	mol H ⁺ eq.	6.51E-03	2.33E-03	2.05E-06	3.16E-04	0.00E+00	6.80E-05	0.00E+00	8.35E-05	0.00E+00
EP-freshwater	kg P eq.	3.54E-05	2.04E-06	2.85E-09	5.10E-04	0.00E+00	1.82E-07	0.00E+00	1.69E-07	0.00E+00
EP-marine	kg N eq.	1.16E-03	6.33E-04	9.35E-07	3.60E-04	0.00E+00	2.21E-05	0.00E+00	3.09E-05	0.00E+00
EP-terrestrial	mol N eq.	1.22E-02	6.94E-03	9.65E-06	1.16E-03	0.00E+00	2.37E-04	0.00E+00	3.34E-04	0.00E+00
POCP	kg NMVOC eq.	4.82E-03	2.15E-03	2.53E-06	1.98E-04	0.00E+00	9.15E-05	0.00E+00	1.13E-04	0.00E+00
ADP-minerals & kg Sb eq. metals*		6.37E-06	6.68E-07	5.89E-10	2.79E-07	0.00E+00	6.14E-08	0.00E+00	2.37E-08	0.00E+00
ADP-fossil*	MJ	2.15E+01	3.38E+00	2.38E-03	2.93E-01	0.00E+00	2.70E-01	0.00E+00	2.54E-01	0.00E+00
WDP*	m ³	7.61E-01	1.35E-02	3.66E-04	5.52E-02	0.00E+00	1.20E-03	0.00E+00	1.07E-02	0.00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									
Particulate matter	disease inc.	7.13E-08	1.68E-08	1.41E-11	5.05E-09	0.00E+00	1.52E-09	0.00E+00	1.80E-09	0.00E+00
Ionising radiation	kBq U-235 eq	1.98E-02	1.10E-03	1.44E-06	6.02E-04	0.00E+00	9.56E-05	0.00E+00	1.28E-04	0.00E+00
Ecotoxicity, freshwater	CTUe	2.10E+01	1.84E+00	1.63E-02	3.46E+00	0.00E+00	1.51E-01	0.00E+00	1.12E-01	0.00E+00
Human toxicity, CTUh cancer		7.62E-10	1.11E-10	7.25E-13	6.23E-11	0.00E+00	8.69E-12	0.00E+00	6.68E-12	0.00E+00
Human toxicity, CTUh non-cancer		1.14E-08	2.14E-09	2.52E-11	1.41E-09	0.00E+00	1.94E-10	0.00E+00	7.38E-11	0.00E+00
Land use	Pt	3.83E+00	1.66E+00	9.80E-04	2.80E+00	0.00E+00	1.61E-01	0.00E+00	5.80E-01	0.00E+00

Table 16 - Results of the environmental performance indicators

Additional Indicators

Indicator	Sub-indicator	Unit	Total	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Use of Renewable Primary Energy	excluding renewable primary energy sources, used as raw materials	MJ	2.61E+00	1.19E+00	3.92E-02	6.90E-05	1.37E+00	0.00E+00	3.44E-03	0.00E+00	4.32E-03	0.00E+00
	renewable primary energy sources used as raw materials	MJ	3.18E-02	3.18E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total	MJ	2.64E+00	1.22E+00	3.92E-02	6.90E-05	1.37E+00	0.00E+00	3.44E-03	0.00E+00	4.32E-03	0.00E+00
Use of Non Renweable Primary Energy	excluding Non-renewable primary energy sources, used as raw materials	MJ	2.07E+01	1.67E+01	3.38E+00	2.28E-03	7.39E-02	0.00E+00	2.71E-01	0.00E+00	2.54E-01	0.00E+00
	Non-renewable primary energy sources used as raw materials	MJ	5.07E+00	4.80E+00	0.00E+00	0.00E+00	2.71E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total	MJ	2.58E+01	2.15E+01	3.38E+00	2.28E-03	3.45E-01	0.00E+00	2.71E-01	0.00E+00	2.54E-01	0.00E+00
Use of secondary material		kg	1.13E+00	1.13E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels		MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewables as secondary fuels		MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of freshwater		m ³	8.42E-01	7.61E-01	1.35E-02	3.66E-04	5.52E-02	0.00E+00	1.20E-03	0.00E+00	1.07E-02	0.00E+00

Indicator	Unit	Total	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Hazardous waste disposed of	Kg	5.32E-05	2.79E-05	2.08E-05	1.47E-08	1.58E-06	0.00E+00	1.74E-06	0.00E+00	1.26E-06	0.00E+00
Non hazardous waste disposed of	Kg	1.30E+00	1.32E-01	1.33E-01	1.90E-04	1.54E-02	0.00E+00	1.31E-02	0.00E+00	1.00E+00	0.00E+00
Radioactive waste disposed of	Kg	1.49E-05	1.37E-05	6.22E-07	9.31E-10	3.92E-07	0.00E+00	5.48E-08	0.00E+00	7.79E-08	0.00E+00

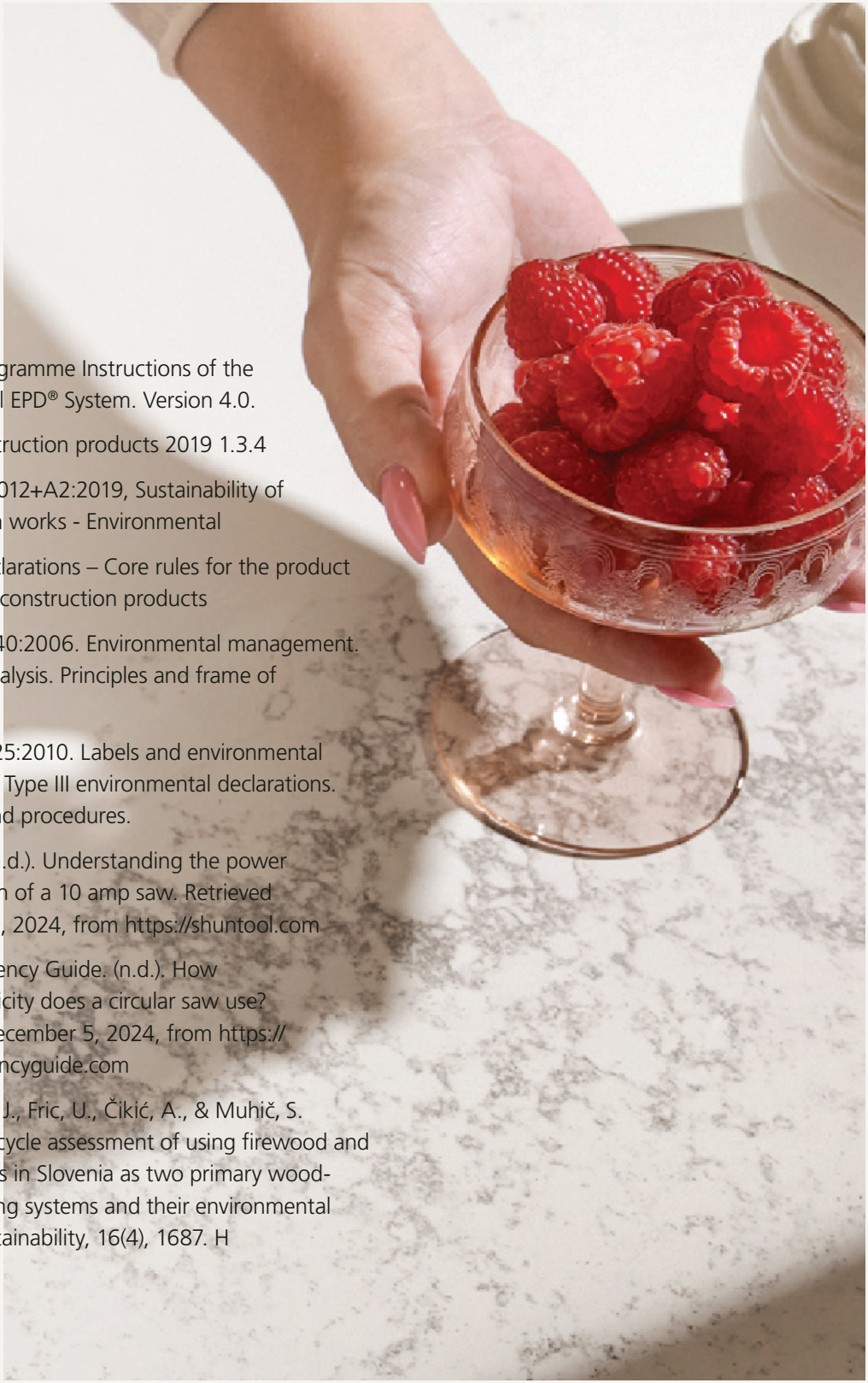
Indicator	Unit	Total	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Components of reuse	Kg	2.80E-01	2.80E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	Kg	8.79E-03	8.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - MJ	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7.2.5 information on biogenic content	-	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Indicator	Unit	Total	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Biogenic carbon content	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon content in accompanying packaging	Kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 17 - Additional Indicators



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://shuntool.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

5143 White Attica

