

Environmental Product Declaration

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

Sustorable from Innovative Stone Technologies BV

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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



Programme Information

Programme: The International EPD® System
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Information about verification and reference PCR:

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
<p>> Product category rules (PCR): <i>PCR 2019:14 Construction products (EN 15804:A2) Version 1.1</i></p>	
<p>> PCR review was conducted by: <i>The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.</i></p>	
<p>> Independent third-party verification of the declaration and data, according to ISO 14025:2006:</p> <p><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification</p>	
<p>> Third party verifier: Ing. Luca Giacomello, PMP® Via Leonardo Fea 35 10148 Torino - Italy</p>	<p>> Approved by: The International EPD® System Technical Committee, supported by the Secretariat</p>
<p>Procedure for follow-up of data during EPD validity involves third party verifier:</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	

LCA Study &
 EPD Design Conducted By:

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Innovative Stone Technologies BV has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.



Product Information

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Manufacturing Plant:	Polatlı/Ankara/Turkey

Description of the organisation:

Sustainable brings the only truly sustainable engineered stone to every architectural and design project, mixing a **unique combination of quartz and recycled PET plastic**. Sustainable provides a more ecological surface capable of fulfilling the most challenging technical capabilities and excelling in quality and design.

100% recyclable, free of hazardous chemicals, unlimited design options, and high-tech qualities present Sustainable surfaces as the best choice for designing authentic, sustainable spaces. In fact, for every Sustainable m², around **100 PET plastic bottles are recycled**. The rigorous manufacturing method, all Sustainable slabs are carefully produced to maintain the same detail and quality.



Product Name: Sustonable

Product Identification: This LCA study evaluates the potential environmental impacts for 1 m² of 6 mm Sustonable Engineered Stone, Cradle to gate with options, with modules C1-C4 and module D (A1-A3 + C + D) approach.

UN CPC Code: 376 Monumental or building stone and articles thereof

Product Technical Specifications			
Technical specification	Test Method	Unit	Value
Density	UNE EN 14617-1	g/cm ³	1.9-2.0
Flexural strength	UNE ISO 178	MPa	68-70+
Impact resistance 5mm thin slabs	UNE EN 14617-9	J	2.6-10
Impact resistance Charpy	EN 14617-22:2008	J/cm ²	0.26
Hardness-Barcol impressor	ISO 19712-2 (ASTM D 2583)	–	50-75
Scratch resistance	UNE EN 438-2:2016 Part 25	N	1.4-2.0
Abrasion resistance	EN 15285	mm	24.5(0.5)A4
Water absorption	UNE EN 14617-1:2005/ DIN EN 438 Part 1&2	%	<0.05
Chemical resistance	UNE EN 14617-10:2005	–	Alkali C4 Acid C4
Thermal expansion coefficient	UNE 14617-11:2006/ DIN EN ISO 12572	m/m/degree C ⁰	12X10 ⁻⁶
Dry heat resistance	UNE EN ISO 19712-2	at 180°C	No change
Wet heat resistance	UNE EN ISO 19712-2	at 180°C	5
Fire resistance	UNE EN ISO 9239-1:2002/BS EN ISO 11925-2:2002	–	B-s1, d0

Intended use of the product:

Sustonable is a versatile product; it can be used for bathroom wall panels, vanity tops, backsplashes, worktops, tabletops, and soon, kitchen countertops and bars. It perfectly fits any project that needs to be durable, resistant, elegant, and mindful of the environment.

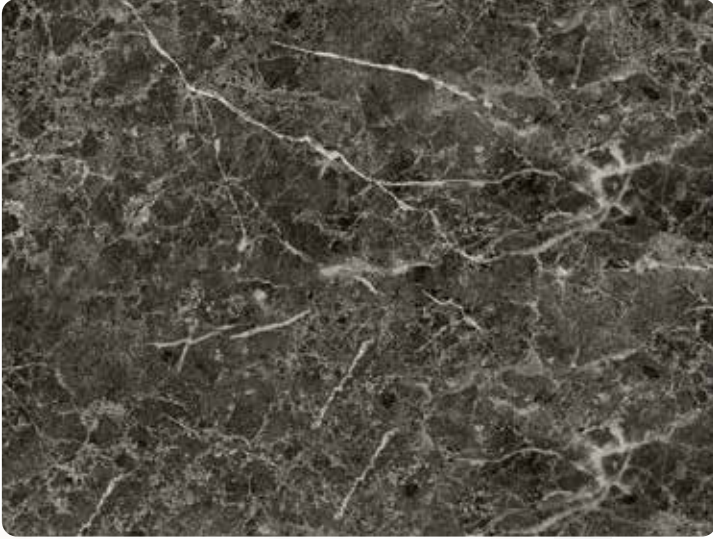
Sustonable surfaces look like the most beautiful natural stone, where upto 50% fewer natural resources are employed to produce them.

Product Description:

Sustonable is the new revolutionary sustainable, thin and ultra-lightweight surface made with a unique combination of quartz and recycled PET plastic.

Sustonable material is thin, lightweight, ultra-resistant, sizeable, with unlimited designs that look like natural stone, and can be recycled and used in a new Sustonable product again. The material can be used for bathroom wall panels, vanity tops, backsplashes, worktops, tabletops, kitchen countertops and bars. It fits perfectly any project that needs to be durable, resistant, elegant, and mindful of the environment.

Sustonable follows the goal of designing out waste, keeping materials in use (no planned obsolescence), and helping the environment from the current exhaustion.



See all their advantages below:

Innovative:

Sustorable has pioneered using quartz and recycled PET from plastic bottles and transforming them into the “Sustorable”.

Very high impact resistance

Sustorable material reduces the possibility of cracking or breaking during installation.

Highly resistant to stains

Sustorable material is exceptionally resistant to being stained or marked because it is made of non-porous inert materials.

Waterproof

Its nearly zero porosity makes Sustorable a waterproof surface, so it is a perfect material to apply when contact with water is required.

Hygienic, easy to maintain and clean

Sustorable is also one of the most sanitary materials available in the surface market due to its practically zero porosity. It prevents the formation of everyday stains and makes cleaning faster and easier.

Sustainable

Sustorable creates composite stone surfaces from recycled PET plastic bottles, giving a noble purpose to our waste while cleaning up the oceans of plastic.

Eco and 100% recyclable

Made by using respectful raw materials and lower virgin components, Sustorable Engineered Stone is one of the most genuinely sustainable and circular surfaces in the market: it can be recycled and used in a new Sustorable product.

Circular

Sustorable supports the Circular Economy by repurposing discarded plastic into something valuable, keeping out material waste, and providing a long life to every Sustorable surface. At the end-of-life Sustorable will not end in a landfill as it can be reused and recycled again.

Free of hazardous chemicals

Sustorable desires to reduce global pollution and generate a cleaner environment; that is why there are no Volatile Organic Compounds (VOC) emissions involved in our production process.

Versatile

Sustorable is perfect for different applications: countertops, shower panels, cladding...



Waste prevention

Sustonable is produced efficiently and continuously to avoid waste, and thanks to its light and thin properties, Sustonable reduces the debris from installation up to 80%.

Versatile

Sustonable is perfect for different applications: countertops, shower panels, cladding and it is totally open to suggestions, so feel free to ask us for any colour and design!

Affordable

The company pursues a more sustainable world. The more people can have access to sustainable products, the healthier the planet will be. Sustainable products cannot be a luxury item.

Unlimited designs

Sustonable designs look like the most beautiful natural stone. The only difference is Sustonable is sustainable.

LCA Information

Declared unit: 1 m² of 6 mm packaged Sustonable ready to delivery at the factory gate.

Reference service life: Not Applicable.

Time representativeness: The production data in this LCA study represents the period of 1st September 2020 and 31st January 2021 .

Database(s) and LCA software used: SimaPro v9.11.1 and Ecoinvent v3.6

Description of system boundaries: Cradle to gate with options, with modules C1-C4 and module D (A1-A3 + C + D). Other stages are very dependent on particular scenarios and are better developed for specific building or construction works.

Data quality and data collection: Data collection for this LCA study has been carried out in accordance with data requirement stated in ISO 14040-44, ISO 14025, ISO 14020 and the requirements given in the General Program Instructions v3.01; PCR Construction products 2019:14, version 1.1 by The International EPD® System and EN 15804:2012+A2:2019.

Upstream data, raw materials production, transportation, fossil fuels and electricity mix data have been obtained from Ecoinvent v3.6 as secondary data. All manufacturing data in core processes has been gathered from the manufacturing plant.

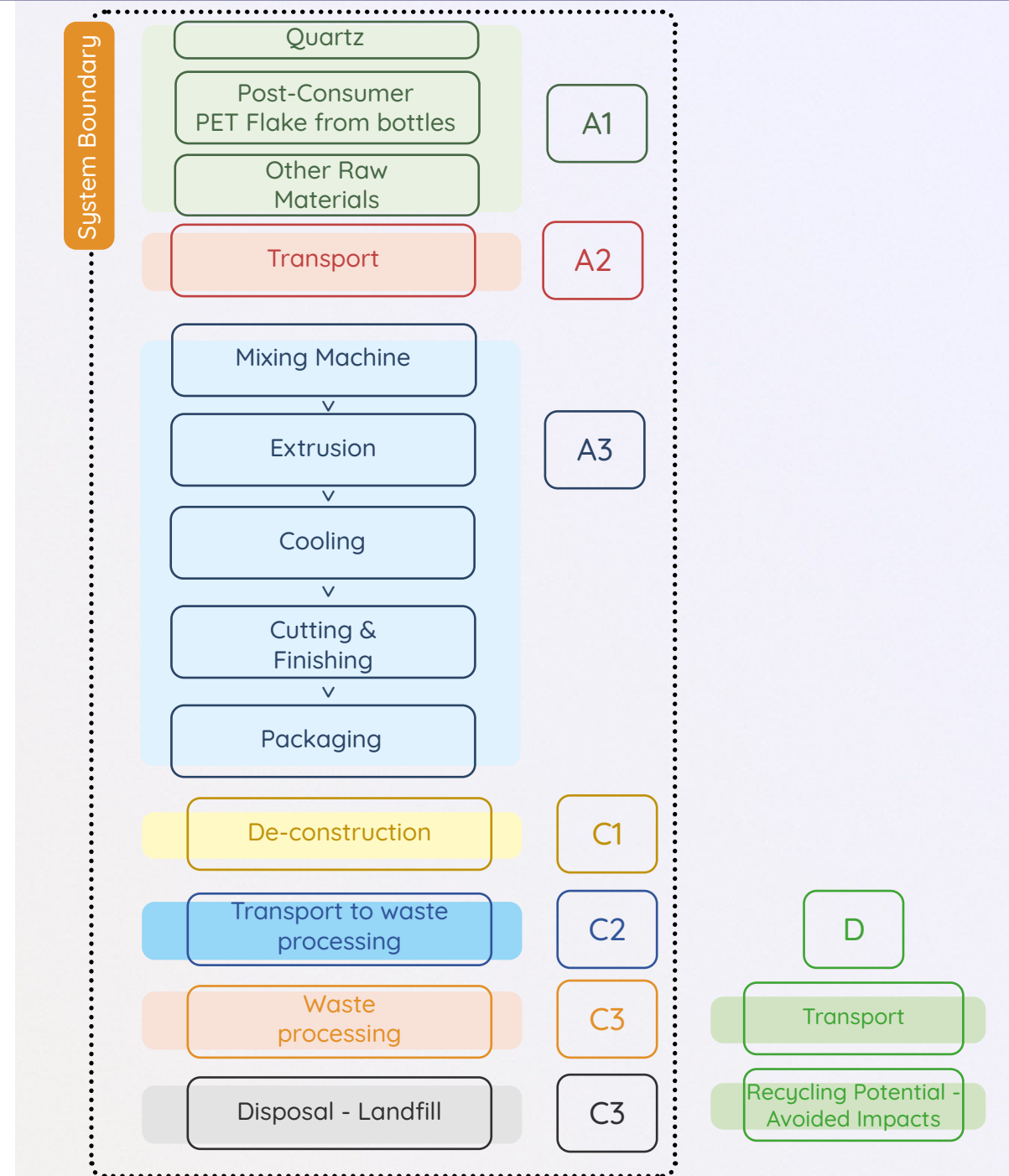
Calculation Methods: The indicators, disclaimers, and other requirements in Section 7.2.3 (for environmental impacts based on the LCIA) and Section 7.2.4 (for resource use, waste, etc.) of EN 15804:2012+A2:2019 have been used and calculated in SimaPro v9.1.1.1.

Allocation: Allocation was avoided by dividing the unit process into two or more sub-processes and collecting the environmental data related to these sub-processes. If not possible, allocation problems were solved by partitioning the system inputs and outputs using the mass criteria according to GPI v3.1.

Mass allocation has been applied for pre-consumer recycled materials according to EN 15804:2012+A2:2019. Allocation for module D as follows: Scrap inputs to the production stage are subtracted from scrap to be recycled at end of life in order to obtain the net scrap output from the product system. This remaining net scrap is then sent to recycling.

Cut-off Rules: Life Cycle Inventory data for a minimum of 99 % of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass and environmental relevance was applied.

Regarding to material, chemical and energy inputs, no cut-off rule has been applied.



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

	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	Recycling potential
MODULES	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	TR	TR	TR	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>99.5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: Declared; ND: Not Declared

Description of declared modules

A1 - Raw Materials Supply

The aggregation of the modules A1, A2 and A3 is allowed by EN 15804. This rule is applied in this EPD and denoted by A1-3. This module represents the extraction and processing of raw materials, the transport to production sites and the manufacture and packaging.

A2 – Transport to The Manufacturer

This stage includes transportation of the raw materials from supplier to factory gate. Transportation types are considered as seaway, road, railroad or etc.

A3 – Manufacturing

This stages includes energy and water consumption during the manufacturing processes. Additionally, packaging materials are covered by this stage. Followed production processes are as;

- Mixing
- Extrusion
- Cooling
- Packaging

C1 - De-construction

During the de-construction operations there will be no water consumption and no machine energy consumption. Deconstruction of Sustonable can be considered negligible.

C2 - Transport to Waste Processing

An average distance of 2500 km has been assumed for the transport to recycling and to fed into the same production system. Transport is calculated on the basis of a scenario with the parameters described in the table below.

Parameters A4 Module	
Transport by road*	Lorry >32 metric ton
Distance (km)	2500
Database	Ecoinvent v3.6

**Technology is Euro 6*

C3 - Waste processing for reuse, recovery and/or recycling

Crushing of product will require energy. It has been assumed that during the crushing operations 1.2 kWh electricity is consumed.

C4 - Final disposal

100% of used product after the lifetime will be collected and recycled into the manufacturing system. It is assumed that 5% of the product is lost during de-construction and 95% is reached to recycling system.

D - Reuse, Recovery or Recycling Potential

Module D reports the environmental aspects of recycled material generated at the end of life minus that used at the production stage.

Content Declaration

Content declaration of Sustainable	
Material	Percentage
Quartz	60%-85%
Post-consumer PET Flake from bottles	12%-25%
Glass fibre	1%-5%
Other Additives	7%-12%
Biogenic carbon	<1%

Content declaration of packaging	
Material	Percentage
Flat Pellet	<1%
Cardboard	<1%
Foam Layer	<1%
	Amount
Biogenic Carbon, kg C	0.1-0.05

Biogenic carbon is arising from wooden pellet packaging material. No substances included into "Candidate List of Substances of Very High Concern (SVHC) for authorisation". No recycling content included in packaging materials.



Environmental Information

Potential Environmental Impact – Mandatory Indicators According to EN 15804

Results for 1 m ² of 6 mm Sustainable							
Indicator	Unit	TOT. A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	8.93	0	2.623	0.688	0.203	-0.4493
GWP-Biogenic	kg CO ₂ eq.	-0.610	0	0.002	0.007	1.013	0.029
GWP-Luluc	kg CO ₂ eq.	0.047	0	0.001	0.007	1.12E-05	-3.09E-04
GWP-Total	kg CO ₂ eq.	8.365	0	2.626	0.702	1.217	-0.421
ODP	kg CFC 11 eq.	6.67E-07	0	6.42E-07	1.96E-08	2.28E-09	-4.19E-08
AP	mol H ⁺ eq.	0.085	0	0.008	0.005	2.30E-04	-0.003
EP-Freshwater	kg PO ₄ ³⁻ eq.	0.006	0	9.21E-04	4.47E-04	2.99E-04	-3.21E-04
	kg P eq.	6.09E-04	0	2.06E-05	7.78E-05	2.59E-06	-1.19E-05
EP-Marine	kg N eq.	0.009	0	1.85E-03	5.95E-04	6.58E-04	-7.62E-04
EP-Terrestrial	mol N eq.	0.098	0	0.021	0.007	0.001	-0.008
POCP	kg NMVOC eq.	0.031	0	0.008	0.002	3.67E-04	-0.002
ADP-Minerals&Metals*	kg Sb eq.	2.60E-04	0	4.32E-05	1.51E-06	1.16E-07	-7.01E-04
ADP-fossil*	MJ	125.5	0	42.4	7.60	0.202	-12.6
WDP	m ³	11.570	0	0.147	0.338	0.007	-0.726

Acronyms

GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption.

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

Potential environmental impact – additional mandatory and voluntary indicators

Results according to PCR2019:14 for 1 m ² of 6 mm Sustainale							
Indicator	Unit	TOT. A1-A3	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO2 eq.	8.89	0	2.60	0.689	0.466	-0.442
Results according to EN 15804+A2 for 1 m ² of 6 mm Sustainale							
PM	[disease inc.]	4.88E-07	0	2.30E-07	1.91E-08	2.16E-09	-5.26E-08
IRP	[kBq U235 eq]	0.270	0	0.186	0.004	0.001	-0.309
ET-freshwater	[CTUe]	163	0	33.8	6.88	2.52	-14.9
HT-cancer	[CTUh]	8.63E-09	0	7.24E-10	1.09E-10	1.53E-10	-3.05E-10
HT-non-cancer	[CTUh]	1.63E-07	0	3.68E-08	5.61E-09	1.29E-09	-7.89E-09
SQP	[pt]	176	0	58.7	4.29	0.375	-26.6

Acronyms	GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology; PM = Particulate matter emissions; IRP = Ionizing radiation, human health; ET-freshwater = Eco-toxicity (freshwater); HT-cancer = Human toxicity, cancer effects; HT-non-cancer = Human toxicity, non-cancer effects; SQP = Potential soil quality index (SQP)
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¹ The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Use of Resources

Results per 1 m ² of 6 mm Sustainale							
Indicator	Unit	TOT. A1-A3	C1	C2	C3	C4	D
PERE	MJ	28.3	0	0.563	1.82	0.009	-1.33
PERM	MJ	0.00	0	0	0	0	0
PERT	MJ	28.3	0	0.563	1.821	0.009	-1.326
PENRE	MJ	125	0	42.4	7.60	0.202	-12.6
PENRM	MJ.	0.00	0	0	0	0	0
PENRT	MJ	125	0	42.4	7.60	0.202	-12.6
SM	kg	2.10	0	0	0	0	0
RSF	MJ	0.00	0	0	0	0	0
NRSF	MJ	0.00	0	0	0	0	0
FW	m ³	0.276	0.000	0.005	0.007	3.83E-04	-0.019

Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water
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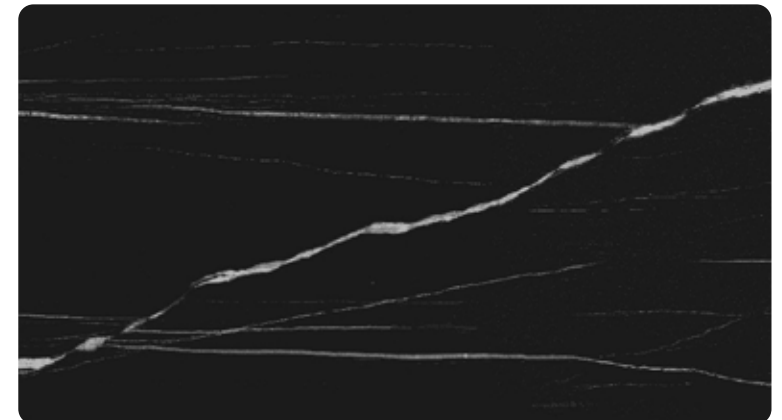
Waste production and output flows

Waste Production

Results per 1 m ² of 6 mm Sustainable							
Indicator	Unit	TOT. A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.044	0	0	0	0	0
Non-hazardous waste disposed	kg	0.672	0	0	0	0.6	0
Radioactive waste disposed	kg	0	0	0	0	0	0

Output Flows

Results per 1 m ² of 6 mm Sustainable							
Indicator	Unit	TOT. A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0
Material for recycling	kg	0.500	0	0	0	0	11.4
Materials for energy recovery	kg	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0	0	0



References

- **ISO 14040:** 2006 Environmental management -- Life cycle assessment -- Principles and framework
- **ISO 14044:** 2006 Environmental management -- Life cycle assessment -- Requirements and guidelines
- **ISO 14025:** 2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures
- **EN 15804:2012+A2:2019** Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- **The International EPD® System**
www.environdec.com
- **The International EPD® System** / The General Programme Instructions v3.01
- **The International EPD® System** / PCR 2029:14 Construction products v1.1 (EN 15804:A2)
- **Ecoinvent 3.6**
<http://www.ecoinvent.org/>
- **SimaPro LCA Software**
<https://simapro.com/>
- **Sustorable**
<https://www.sustorable.com>

Differences Versus Previous Versions

- **15.06.2021** - The typo related to product thickness is fixed and product thickness information is added to titles of result tables. No change in any results.

Contact

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