

Environmental Product Declaration

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

Engineered Quartz Slabs

from

ARL Infratech Limited



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Licensee:	EPD India
Type of EPD:	EPD of multiple products based on average results of the product group (<i>complete list in Product Information Section</i>)
EPD registration number:	EPD-IES-0032146:002
Version date:	2026-06-30
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An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com	

 **EPD**
INTERNATIONAL EPD SYSTEM



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GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>Construction Products; PCR 2019:14; version 2.0.1; UN CPC 3756 - Other articles of cement, concrete or artificial stone</i>
PCR review was conducted by: <i>Rob Rouwette (chair), Noa Meron (co-chair)</i>
c-PCR, if applicable: <i>Not Applicable</i>

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
☒ Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: <i>Dr. Nikolay Minkov, greentability Ltd. and TÜV Austria</i> Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: M/s ARL Infratech Limited

Address: A-27/13-A, Akshat House, Kanti Chandra Road, Bani Park, Jaipur

Contact: Mr. Akshat Jain ; M: +91-9928927722; E-mail: akshat@arlinfratech.com

Address and contact information of the LCA practitioner commissioned by the EPD owner:

M/s Sustech Technocomm Pvt. Ltd., Nagpur, MH, India - 440018

Mr. Kaustubh Joglekar

M: +91-7387002532

Email: office@sustechsolutions.in

Description of the organisation: ARL Infratech Ltd., established in 1996, is a diversified building-materials manufacturer producing fibre-cement products, AAC blocks, metal roofing sheets and engineered quartz slabs. Its advanced facilities in Rajasthan are supported by strong mineral-processing expertise and rigorous quality systems certified to ISO 9001 and ISO 14001, with all products BIS compliant. ARL's engineered quartz slabs also hold global certifications including GREENGUARD, GREENGUARD Gold, NSF, and CE marking. With a distribution network of over 1,500 partners across India and growing international reach, ARL emphasizes integrity, responsible production, zero-discharge operations and sustainable growth.

Product-related or management system-related certifications: ISO 9001, ISO 14001, BIS, GREENGUARD, GREENGUARD Gold, NSF, CE.

PRODUCT INFORMATION

Product name: Engineered Quartz Slabs

Product identification: Aggregated polished stone surface/slab material

Visual representation of the product



(Representative Image)

UN CPC code: UN CPC 375 - Articles of concrete, cement and plaster

Product description: The product covered by this EPD is engineered quartz slabs manufactured by M/s ARL Infratech Limited, composed of approximately 93% ground quartz and 7% polymer resins, pigments, and additives, produced using BretonStone technology. The slabs are intended for interior

construction applications, including countertops, flooring, wall cladding, and similar architectural uses in residential and commercial buildings. The product provides mechanical strength, durability, and resistance to staining and abrasion, with a reference service life (RSL) of 75 years, subject to appropriate installation and maintenance. The product does not significantly influence operational energy use in buildings. Due to its durability, it may contribute to reduced replacement frequency over the building life cycle. The product is intended for interior use and is not recommended for prolonged exposure to outdoor weathering or extreme temperatures unless specifically designed for such conditions.

Name and location of production site(s): ARL Infratech Limited, (Quartz Division), Plot No. SPL-185, RIICO Industrial Area, Phase II, Bagru Extension – 303007, District – Jaipur, Rajasthan, India

References to any relevant websites for more information or explanatory materials:

<https://www.arlinfratech.com/>

<https://spectasurfaces.com/>

List of products: This EPD covers multiple engineered quartz slab products manufactured by M/s ARL Infratech Limited. The reported environmental performance results represent the average impacts associated with the production of 1 kg of engineered quartz slabs, based on the averaged production data. The complete list is as follows:

Absolute Black MV-104/3	Dark Thunder PL-633-18	Ice Storm PL-481
Absolute Black MV-104/2	Divine Gold PL-191-4	Ice Storm PL-481
Absolute Black MV-104/2	Divine Gold PL-191-4	Magic Night AD-104-2
Absolute Gray MV-103/3	DS Dark Gray OG-5066	Magic Night AD-104-2
Absolute Gray MV-103/2	DS Dark Gray OG-5066	Magic Night AD-104-2
Absolute White MV-101/3	DS Fossil Gray CRP-03	Magnus AD-3922-19
Absolute White MV-101/2	DS Fossil Gray CRP-03	Miracle AL-3111
Absolute White MV-101	DS Light Gray OG-5033	Natura Beige AL-1922
Amazonite AR-103/3	DS Light Gray OG-5033	Natura Beige AL-1922
Amazonite AR-103/2	Dune Mist CRP-04	Natura White AL-1111
Amazonite AR-103/2	Dune Mist CRP-04	Natura Beige AL-1111
Black Velvet PL-104-3/3	Dune Mist CRP-04	Nexus White AL-3210
Black Velvet PL-104-3/2	Elan Gray AL-2133	Nexus White AL-3210
Black Velvet PL-104-3/2	Flavio AD-2211-12	Orion AL-3418
Blossom White AD-421-6	Flavio AD-2211-12	Oyster White CRP 02
Blossom White AD-421-6	Fluttering White MV-321	Pebble White OG-201
Blossom White AD-421-6	Fluttering White MV-321	Pebble White OG-201
Calacatta Colorado NP-101-M4	Fluttering White MV-321	Pebble White OG-201
Calacatta Colorado NP-101-M4	Frost White OG-402	Perfect Storm AD-391-10

Calacatta Colorado NP-101-M4	Frost White OG-402	Perfect Storm AD-391-10
Calacatta Colorado LT NP-101-M6	Frost White OG-402	Pure Cemento OG-607
Calacatta Emerald AR-102	Fort White AL-3313	Pure Gray OG-503
Calacatta Emerald AR-102	Gallium AL-2211	Sierra AD-1111-15
Calacatta Oasis NP-101-7	Gallium AL-2211	White Tango AD-101-B1
Calacatta Oslo ET-101	Gallium AL-2211	Starry Black OG-104
Calacatta Sahara NP-101-7	Giovanna PL-121-20	Starry Black OG-104
Calacatta Sahara AR-101	Gold Dust AL-2966	Starry Gray OG-103
Cannoli CRP-101	Gold Elixir NP-102-15	Starry White OG-101
Cannoli CRP-101	Gold Elixir NP-102-15	Starry Black OG-101
Cannoli CRP-101	Gold Rush PL-191	Starry White OG-101
Castle White Calacatta AD-3113-M6	Gold Dust PL-191	Super White PL-101
Castle White AD-3113	Golden Ripple MV-391	Super White PL-101
Castle White AD-3113	Golden Ripple MV-391	Uno Beige OG-605
Classic Calacatta AD-101-M2	Golden Ripple MV-391	Venera AR-105
Classique Soap Stone AD-3033-14	Gray Pearl AR-104	Venera AR-105
Classique Soap Stone AD-3033-14	Gray Pearl AR-104	White Sand OG-301
Classique Soap Stone AD-3033-14	Gray Pearl AR-104	White Sand OG-301
Coastal Fog AL-4155	Gray Sand OG-303	White Vortex PL-101-B1
Coastal Fog AL-4155	Gray Sand Neo OG-303A	White Vortex PL-101-B1
Dark Magma PL-634-17	Heavenly White NP-101	Winter Gray AL-1136
Dark Magma PL-634-17	Heavenly White NP-101	Winter Gray AL-1136

CONTENT DECLARATION

- The mass (weight) of one unit of a product per declared unit: The declared unit is 1 kg of engineered quartz slab. The mass of the declared unit is therefore 1 kg.
- Content of the product in the form of a list of materials and substances, and their mass:

Table 1 Content information for Engineered Quartz Slabs manufactured by M/s ARL Infratech Limited per declared unit

Material	Inclusion in product (per declared unit, i.e., 1 kg)
Quartz Aggregates	0.87 – 0.93

Polyester Resin	0.07 – 0.13
Pigments	<0.01
Catalyst and Cobalt	<0.01

- The mass and the content of distribution and/or consumer packaging:

Table 2 Packaging inventory per declared unit (1 kg) of Engineered Quartz Slab manufactured by M/s ARL Infratech Limited

Sr. No.	Input	Quantity	Unit
1	Packing material 1 - Guard film	1.23E-03	kg
2	Packing material 2 - Wood	1.09E-02	kg
3	Packing material 3 - Kraft paper	1.38E-03	kg

- Information on the environmental and hazardous/toxic properties of a substances contained in the product: Based on available formulation data and supplier declarations, no substances listed on the current European Chemicals Agency Candidate List of SVHCs are present in the product above the threshold of 0.1% (w/w), either in the finished product or in any constituent component.
- Other information on substances with hazardous and toxic properties: Based on available product composition data and supplier information, no substances with hazardous or toxic properties requiring declaration under applicable regulations in the declared market are present in the finished product. This statement is independent of the LCA modelling approach and applicable cut-off rules.
- The declared share of biogenic/recycled materials:

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Quartz Aggregates	0.87 – 0.93	0	0	0
Polyester Resin	0.07 – 0.13	0	1.04	0.01
Pigments	<0.01	0	0	0
Catalyst and Cobalt	<0.01	0	0	0
TOTAL	1	0	1.04	0.01

The content declaration presented in this EPD represents the average composition of the engineered quartz slab product range covered by this declaration. It is based on aggregated production data and reflects the typical material proportions (quartz aggregates, polymer resins, pigments, and additives) across all included product variants. Variations in composition between individual products are considered to be within normal manufacturing tolerances.

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Packing material 1 - Guard film	1.23E-03	0.12	0

Packing material 2 - Wood	1.09E-02	1.09	0.005
Packing material 3 - Kraft paper	1.38E-03	0.14	0.001
TOTAL	1.35E-02	1.35	0.006

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

LCA INFORMATION

Declared unit The Declared unit (DU) for the study is defined as **1 kg of Engineered Quartz Slab**

Reference service life: 75 years

Time representativeness: **1st APRIL 2024 – 31st MARCH 2025**

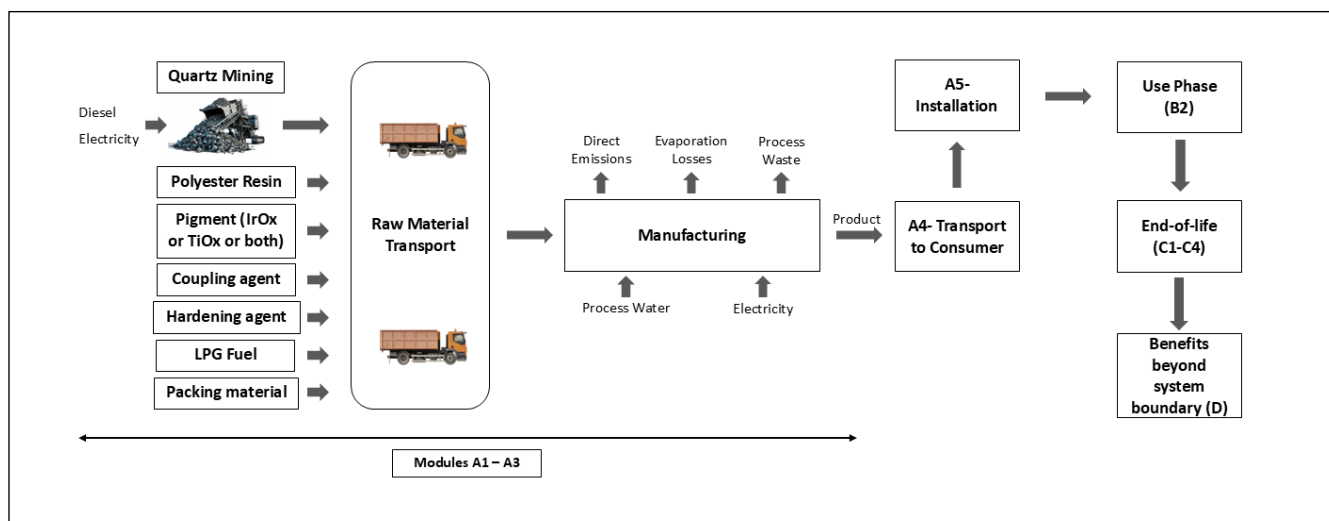
Geographical scope: The geographical scope of the study is primarily India, representing the location of manufacturing and the source of primary data for Modules A1–A3. Background processes are modelled using datasets from ecoinvent v3.12. Where India-specific data is not available, global average datasets have been applied. The only use-stage module considered is B2 (maintenance), which is modelled using global datasets. End-of-life modules are based on a combined scenario reflecting both domestic and international markets, consistent with the product's distribution. The study represents Indian production with supplementary global data for background processes and use-stage modelling.

Database(s) and LCA software used: ecoinvent v3.12 integrated to SimaPro Analyst v10.3.0.1

Description of system boundaries:

- b) Cradle to gate with options, modules C1–C4, module D, and optional modules (A1–A3 + C + D + A4–A5 +B2)

Process flow diagram:



More information:

No recycled materials are used as input to the product system. Accordingly, no allocation procedures related to recycled material inputs have been applied in accordance with PCR 2019:14, Section 4.5.3.

The data values (points) collected and used for the LCA of the product system are sourced from the annual production and sales reports of M/s ARL Infratech Limited. The overall assessment of the data quality is thus declared as good and representative of the considered product system.

- **Modelling inventory:** The data inventory for raw materials, transportation, manufacturing, use and end-of-life phases represent primary data collected from source. All data collected were subjected to critical review in consultation with M/s ARL Infratech Limited.
- **Background data:** The modelling was carried out using SimaPro Analyst software. Expert judgement with respect to the choice of dataset (Ecoinvent) for modelling the input-output flows (material and energy) as laid down in the inventory was used to ensure highest grade of representativeness. Detailed database considerations can be accessed at the end of the supporting LCA report (annexure B). Fuel combustion (LPG) related emissions were empirically estimated since only the corresponding production database was available.

A Data Acquisition Template (DAT) covering all relevant material and energy inputs and outputs was developed and shared with M/s ARL Infratech Limited. Data for the period 1 April 2024–31 March 2025 was collected from annual production and sales records. Identified discrepancies were resolved through stakeholder engagement. No inventory exclusions or additional assumptions were applied, and data reliability was verified through a material balance with an error margin of $\pm 2\%$.

Infrastructure and capital goods (e.g., buildings, machinery, and production equipment) have not been included in the LCA model.

Electricity used in the manufacturing process (Module A3) is sourced from the Indian Northern regional grid and modelled using the ecoinvent v3.12 dataset “Electricity, high voltage {IN-Northern grid} | market for electricity, high voltage | Cut-off, S” and Electricity, low voltage {IN-RJ} electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted | Cut-off, S. The climate impact intensity of the electricity mix used is determined to be 1.11 kg CO₂ eq per kWh.

The foreground data representing core manufacturing processes (including raw material inputs, energy consumption, and internal transport) are based on primary site-specific data collected from the manufacturer. Background processes were modelled using ecoinvent 3.12 datasets.

In accordance with PCR 2019:14, Section 4.8.4, the end-of-life treatment of packaging materials is included in Module A5. Packaging waste is assumed to be generated at the construction site following product installation. This module assumes a combined end-of-life scenario for Indian as well as Global averaged disposal mix (as available with ecoinvent v3.12 database) since 46.73% of the total production is domestically distributed whereas 53.27% is exported globally. Three types of packaging materials – polyethylene film, wood and kraft paper – are modelled for waste treatment, according to prevalent norms in the Indian as well as Global contexts (secondary data vide ecoinvent treatment mixes). The end-of-life for the packaging considered are modelled as respective treatment mix. The selected datasets include default transport to waste treatment facilities; therefore, additional transport processes have not been modelled to avoid double counting. No benefits or loads beyond the system boundary are declared for packaging materials. Accordingly, no recycling credits are assigned.

The total share of primary data contributing to the declared GWP-GHG results of modules A1-A3 is 22.05 %.

Module Descriptions:

A1-A3 – Production Phase: Module A1 reports emissions pertaining to raw material production. Module A2 estimates transport impacts for raw materials (from vendor to the manufacturing site) while Module A3 accounts for production related emissions. Emissions pertaining to the acquisition and transport of appropriate quantities of packing materials is also included in these modules.

Given the present status of mining operations being beyond the scope of activities of M/s ARL Infratech Limited, vendor information regarding the same inclusive of energy and fuel consumption are used for modelling mining related emissions and are regarded as primary activity data. However, on-site particulate emissions and other system outflows contributing to environmental burden are assessed to the extent of availability of data.

After a thorough inventory analysis, it was observed that the variations in the individual product lines is a consequence of the quartz percentage inclusion which ultimately influences the same for pigments, resins and polymers. Categorization of the 123 product models was done as per the quartz percentage and the type of pigment in use (since the rest of the components remained almost the same across all models) into 18 categories and one category was created considering the summation of all inputs and waste streams representing the annual production profile of the Engineered Quartz Slabs (represented in this report). Manufacturing emissions pertaining to packaging materials and their respective transport related emissions are declared under A1-A3.

A4 – Transport to Consumer: ARL Infratech Limited exports nearly 53% of its annual production (mainly to the Americas and Europe) while 47% goes for domestic supply. Transport data as supplied by M/s ARL Infratech Limited has been used to model emissions pertaining to Module A4. Exact transport distances (with acceptable general assumptions) were considered in modelling domestic transport related emissions. Weighted averaging of transport activity was performed for accurately estimating the combination of domestic and export-based product distribution.

A5 – Installation: Installation emissions are mapped by considering water usage of 0.13 kg per kg of slab material. Since a manual installation procedure is assumed, no energy (electricity) requirement has been modelled. Furthermore, the biogenic content in the packaging materials (wood and kraft paper) is removed by assigning equivalent emissions in module A5. Similarly, the biogenic content of the product (due to polyester resin) is removed in the disposal stage (module C4).

B2 – Maintenance: The recommended practice for maintenance of Engineered Quartz Slabs under general installation arrangements remains washing with soap (or detergent) and water (same as that of a regular countertop). 44 L of water and 0.06 kg of surfactant per kg of slab over an estimated service life of 75 years is considered as per recommendation from M/s ARL Infratech Limited.

Other modules included in the Use Stage, i.e., B1, B3-B7, are deemed not relevant and are NOT DISCLOSED as per the following declarations pertinent to the use profile of the product:

- **B1 – Use:** Zero emissions have been declared for Module B1, no input of material or energy is necessary while the countertop is in use.
- **B3 – Repair; B4 – Replacement and B5 – Refurbishment:** Due to the sturdy nature of the material owing to ARL's state-of-the-art technology and use of quality materials, no repair, replacement or refurbishment is envisaged in the estimated RSL.
- **B6 – Operational Energy Use:** No energy required while operating on the slab by virtue of design.
- **B7 – Operational Water Use:** Not evaluated as a separate case, only pertinent water use is estimated in the maintenance phase, accounted for in Module B2.

C1 – Deconstruction/Demolition: Manual deconstruction for the slabs is recommended by M/s ARL Infratech Limited (translating into no use of energy or additional input materials), hence its impact is considered to be 0.

C2 – Transport (to end-of-life): Average distance of 100 km to waste disposal site is considered (as confirmed by M/s ARL Infratech Limited). However, this module is evaluated for the transport of the material at the end of its service life. Typical end of life operation for the product remains landfilling.

C3 – Waste Processing: Construction products by the nature of the product under investigation, i.e., Engineered Quartz Slabs, are typically devoid of processing prior to disposal. Hence module C3 is declared to have 0 emissions.

C4 – Disposal: At the end of service life, the disposal of the slab is modelled as 100% inert waste to landfill.

D – Benefits beyond System Boundary: Module D accounts for benefits from waste treatment processes occurring both within the researched scenarios and beyond the study boundaries. Since the countertops are currently disposed of entirely via landfill, there are no end-of-life recycling or reuse benefits to report. As no benefits or burdens arise outside the system boundary, the Module D value remains zero in all result charts.

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

	Product stage			Distribution/ installation/ stage		Use stage							End-of-life stage				Beyond product life cycle
	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
Module	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	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	IND	GLO	GLO	-	GLO	-	-	-	-	-	GLO	GLO	GLO	GLO	-
Share of primary data	22.05 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-29.98 / +24.71 %			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	ND			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Summary of data quality assessment:

In compliance with EN15941, dataset specific data quality assessment is performed for processes contributing > 80% towards the total impacts across all the reported categories. Based on the contribution analysis, the following processes together account for around 83% of the total impacts:

- Polyester resin
- Transport to consumer
- User maintenance
- Electricity mix

Accordingly, these datasets are selected for detailed data quality assessment.

Dataset → Parameter↓	Polyester resin	Transport to consumer	User maintenance	Electricity Mix
Precision / Reliability	Good	Very good	Good	Good
Completeness	Good	Good	Good	Very Good

Temporal	Very good	Very good	Very good	Very good
Geographical	Good	Good	Good	Good
Technological	Good	Good	Good	Good
Remarks / Justification	Global average dataset used as representative secondary data;	Based on actual logistics and verified dispatch distances	Scenario justified as per use-stage requirements	Site-specific measured data modelled using ecoinvent
DQR	1.80	1.60	1.80	1.60

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of engineered quartz slabs (foreground processes: energy use, material inputs, packaging, internal transport)	Collected data	EPD owner	2024-25	Primary data	0.62 %
Material Production	Database	ecoinvent 3.12	2025	Secondary data	0 %
Electricity generation (IN-Northern grid + Solar)	Database	ecoinvent 3.12	2025	Primary data	16.35 %
Quartz raw material production	Database	ecoinvent 3.12	2025	Secondary data	0 %
Upstream transport processes	Database	ecoinvent 3.12	2025	Primary data	5.08 %
Other background processes	Database	ecoinvent 3.12	2024-25	Secondary data	0 %
Total share of primary data, of GWP-GHG results for A1-A3					22.05%

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP - fossils	kg CO ₂ eq.	1.24E+00	4.14E-01	1.46E-03	2.55E-01	0.00E+00	2.02E-02	0.00E+00	1.09E-02	0.00E+00
GWP - biogenic	kg CO ₂ eq.	-7.22E-02	6.84E-05	2.90E-02	0.00E+00	0.00E+00	6.42E-06	0.00E+00	5.49E-02	0.00E+00
GWP - luluc	kg CO ₂ eq.	4.88E-02	8.23E-05	2.47E-07	5.44E-02	0.00E+00	9.06E-06	0.00E+00	6.58E-06	0.00E+00
GWP - TOTAL	kg CO ₂ eq.	1.22E+00	4.14E-01	3.04E-02	3.09E-01	0.00E+00	2.02E-02	0.00E+00	6.58E-02	0.00E+00
ODP	kg CFC 11 eq.	5.07E-06	5.27E-09	2.16E-11	1.05E-08	0.00E+00	2.57E-10	0.00E+00	2.66E-10	0.00E+00
AP	mol H ⁺ eq.	5.60E-03	6.87E-03	6.29E-06	1.38E-03	0.00E+00	6.90E-05	0.00E+00	1.18E-04	0.00E+00
EP-freshwater	kg P eq.	4.67E-04	1.95E-05	1.38E-07	7.71E-05	0.00E+00	2.22E-06	0.00E+00	1.73E-05	0.00E+00
EP-marine	kg N eq.	1.57E-03	2.07E-03	6.83E-06	9.26E-04	0.00E+00	2.19E-05	0.00E+00	2.92E-05	0.00E+00
EP-terrestrial	mol N eq.	1.36E-02	2.27E-02	3.10E-05	3.99E-03	0.00E+00	2.38E-04	0.00E+00	3.17E-04	0.00E+00
POCP	kg NMVOC eq.	1.00E-02	6.20E-03	1.46E-05	1.45E-03	0.00E+00	9.35E-05	0.00E+00	1.13E-04	0.00E+00
ADP-minerals&metals*	kg Sb eq.	6.32E-06	5.14E-07	8.44E-10	1.81E-06	0.00E+00	6.63E-08	0.00E+00	2.03E-08	0.00E+00
ADP-fossil*	MJ	1.93E+01	5.34E+00	3.73E-03	4.33E+00	0.00E+00	2.80E-01	0.00E+00	2.43E-01	0.00E+00
WDP*	m ³	3.45E-01	1.30E-02	3.09E-04	6.49E-01	0.00E+00	1.30E-03	0.00E+00	-1.59E-01	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									

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on 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 results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Environmental impact assessment has been performed using the characterisation factors of the EF 3.1 reference package in accordance with EN 15804 + A2 and the applicable PCR.

No biogenic carbon leaves the product system in module A5, and no recovered energy leaves the product system in modules A5 or C. Therefore, no prior balancing of biogenic carbon or recovered energy has been applied in modules A1–A3.

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ eq.	1.30E+00	4.14E-01	9.32E-03	3.09E-01	0.00E+00	2.02E-02	0.00E+00	1.09E-01	0.00E+00

Resource use indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
PERE	MJ	2.98E-01	3.77E-02	1.52E-04	0.00E+00	0.00E+00	3.74E-03	0.00E+00	3.05E-03	0.00E+00
PERM	MJ	1.83E+00	0.00E+00	0.00E+00	2.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.13E+00	3.77E-02	1.52E-04	2.15E+00	0.00E+00	3.74E-03	0.00E+00	3.05E-03	0.00E+00
PENRE	MJ	3.39E+00	5.34E+00	3.73E-03	0.00E+00	0.00E+00	2.80E-01	0.00E+00	2.43E-01	0.00E+00
PENRM	MJ	1.59E+01	0.00E+00	0.00E+00	4.33E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.93E+01	5.34E+00	3.73E-03	4.33E+00	0.00E+00	2.80E-01	0.00E+00	2.43E-01	0.00E+00
SM	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
RSF	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
NRSF	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
FW	m ³	3.75E-04	0.00E+00	1.30E-04	4.40E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
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									

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Waste indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6.73E-04	8.00E-05	1.48E-05	4.48E-04	0.00E+00	7.59E-06	0.00E+00	4.95E-05	0.00E+00
Non-hazardous waste disposed	kg	1.11E-01	1.28E-01	1.55E-04	1.97E-02	0.00E+00	1.30E-02	0.00E+00	1.00E+00	0.00E+00
Radioactive waste disposed	kg	1.22E-05	6.04E-07	1.84E-09	3.53E-06	0.00E+00	5.52E-08	0.00E+00	4.54E-08	0.00E+00

Output flow indicators

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Components for re-use	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
Material for recycling	kg	0.00E+00	0.00E+00	1.35E-02	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
Exported energy, electricity	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
Exported energy, thermal	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

Additional LCA results (other environmental performance results) of the product(s)

The following additional indicators are declared for the considered product system:

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C3	C4	D
Particulate Matter	disease inc.	5.38E-08	5.86E-08	2.10E-09	1.60E-08	0.00E+00	1.56E-09	0.00E+00	1.79E-09	0.00E+00
Ionizing radiation	kBq U-235 eq	1.95E+05	2.49E-03	7.30E-06	1.43E-02	0.00E+00	2.25E-04	0.00E+00	1.85E-04	0.00E+00
Ecotoxicity, freshwater	CTUe	2.19E+01	6.00E-01	2.63E-02	5.77E+00	0.00E+00	5.15E-02	0.00E+00	1.69E-01	0.00E+00

Human toxicity, cancer	CTUh	1.03E-09	3.66E-10	3.02E-12	4.10E-10	0.00E+00	3.38E-12	0.00E+00	4.25E-12	0.00E+00
Human toxicity, non-cancer	CTUh	1.16E-08	3.08E-09	7.92E-11	3.24E-09	0.00E+00	1.73E-10	0.00E+00	1.90E-10	0.00E+00
Land use	Pt	8.07E+00	1.75E+00	9.46E-03	7.31E+00	0.00E+00	1.64E-01	0.00E+00	5.76E-01	0.00E+00

- Only one representative scenario has been modelled for modules A4–D in accordance with the applicable PCR. No additional alternative scenarios have been assessed.
- No alternative modelling approaches have been applied. The LCA has been conducted in accordance with PCR 2019:14 and EN 15804 + A2 using the default modelling requirements.

The present analysis classifies the Engineered Quartz Slabs under the UNCPC 3756 - Other articles of cement, concrete or artificial stone. A complete list of materials is provided in the content information table (Table 1). A total of 123 product types (Engineered Quartz Slab) have been classified into 18 sub-classes based on the Quartz content. Also, an annual aggregated production category for Engineered Quartz Slab is considered for the data inventory, which is chosen for reporting. The variations information (expressed in percentage) can be accessed as follows:

Impact Category	Unit	Best Case	Representative	Worst Case
GWP - fossils	kg CO ₂ eq.	18.87	1.94E+00	15.61
GWP - biogenic	kg CO ₂ eq.	1.22	1.17E-02	2.08
GWP - luluc	kg CO ₂ eq.	20.54	1.03E-01	15.88
GWP - TOTAL	kg CO ₂ eq.	18.85	2.06E+00	15.54
ODP	kg CFC 11 eq.	22.43	5.09E-06	23.10
AP	mol H ⁺ eq.	10.76	1.40E-02	9.27
EP - freshwater	kg P eq.	14.04	5.83E-04	12.20
EP - marine	kg N eq.	8.85	4.62E-03	7.72
EP - terrestrial	mol N eq.	7.90	4.08E-02	7.13
POCP	kg NMVOC eq.	20.46	1.79E-02	16.46
ADP - metals and minerals	kg Sb eq.	27.69	8.73E-06	22.35
ADP - fossil	MJ, net calorific value	22.17	2.95E+01	17.81
WDP	m ³ world eq. deprived	13.50	8.49E-01	10.99
Particulate Matter	disease inc.	13.34	1.34E-07	11.15
Ionizing radiation	kBq U-235 eq	0.18	1.95E+05	9.36
Ecotoxicity, freshwater	CTUe	28.58	2.85E+01	23.33
Human toxicity, cancer	CTUh	20.78	1.82E-09	16.75
Human toxicity, non-cancer	CTUh	16.49	1.83E-08	14.59
Land use	Pt	15.02	1.79E+01	12.08

ADDITIONAL ENVIRONMENTAL INFORMATION

The following additional information is declared along with the environmental declarations as mandated under PCR 2019:14 :-

- Conversion factors for converting the declared results of a product group to results for specific products within the group (Tables 3 and 4)

Table 3 Conversion factors for mandatory and additional indicators for product types of Engineered Quartz Slabs manufactured by M/s ARL Infratech Limited (mapped over modules A1-A3)

PARAMETER	IrOx_85. 5	IrOx_86. 5	TiOx_83. 5	TiOx_84. 5	TiOx_85. 5	TiOx_86. 5	TiOx_87. 5	TiOx_88. 5	TiOx_89. 5
GWP - fossils	1.04	0.95	1.24	1.03	1.00	0.98	0.95	0.89	0.83

GWP - biogenic	1.07	0.96	1.25	1.04	1.00	0.97	0.92	0.86	0.79
GWP - luluc	1.08	0.95	1.34	1.05	1.00	0.96	0.90	0.82	0.73
GWP - TOTAL	1.04	0.95	1.25	1.03	1.00	0.98	0.95	0.89	0.83
ODP	1.11	1.07	1.23	1.04	1.07	1.09	1.13	1.13	1.06
AP	1.01	0.93	1.23	1.03	1.00	0.98	0.96	0.91	0.85
EP - freshwater	1.02	0.96	1.15	1.01	1.00	0.99	0.97	0.94	0.90
EP - marine	1.04	0.95	1.23	1.02	1.00	0.98	0.96	0.92	0.85
EP - terrestrial	1.03	0.95	1.21	1.01	1.00	0.98	0.97	0.93	0.86
POCP	1.06	0.94	1.29	1.04	1.00	0.97	0.92	0.86	0.78
ADP - met. & min	1.04	0.92	1.31	1.05	1.00	0.97	0.92	0.85	0.77
ADP - fossil	1.05	0.95	1.27	1.04	1.00	0.97	0.93	0.87	0.80
WDP	1.02	0.92	1.27	1.04	1.00	0.98	0.94	0.88	0.81
PM	1.02	0.92	1.28	1.04	1.00	0.98	0.94	0.89	0.81
IR	1.01	0.98	1.09	0.94	0.98	1.01	1.05	1.07	1.00
FET	1.07	0.96	1.30	1.05	1.01	0.99	0.95	0.89	0.81
HT, cancer	1.09	0.97	1.30	1.04	1.00	0.97	0.93	0.86	0.78
HT, non-cancer	1.03	0.94	1.23	1.02	1.00	0.98	0.96	0.91	0.85
LU	1.04	0.94	1.27	1.04	1.00	0.97	0.93	0.87	0.80

PARAMETER	TiOx_9 0.5	Ti- IrOx_83.5	Ti- IrOx_85.5	Ti- IrOx_86.5	Ti- IrOx_87.5	Ti- IrOx_88.5	Ti- IrOx_89.5	Ti- IrOx_91.5	Slab - No Pigments
GWP - fossils	0.77	1.11	1.01	0.97	0.90	0.88	0.86	0.70	1.02
GWP - biogenic	0.73	1.17	1.02	0.98	0.89	0.86	0.83	0.67	1.03
GWP - luluc	0.65	1.22	1.02	0.97	0.86	0.82	0.78	0.57	1.03
GWP - TOTAL	0.77	1.11	1.01	0.97	0.90	0.88	0.86	0.70	1.02
ODP	1.04	0.85	0.81	0.81	0.80	0.84	0.85	0.77	1.65
AP	0.79	1.08	1.00	0.97	0.91	0.90	0.87	0.73	0.99
EP - freshwater	0.86	1.05	1.00	0.99	0.94	0.93	0.92	0.82	1.00
EP - marine	0.80	1.06	1.00	0.97	0.91	0.90	0.88	0.74	1.02
EP - terrestrial	0.82	1.03	1.00	0.98	0.92	0.91	0.90	0.76	1.01
POCP	0.71	1.16	1.01	0.97	0.88	0.85	0.82	0.64	1.02
ADP - met. & min	0.70	1.19	1.01	0.97	0.87	0.85	0.81	0.62	0.99
ADP - fossil	0.73	1.15	1.01	0.97	0.89	0.86	0.83	0.66	1.03
WDP	0.74	1.15	1.01	0.97	0.89	0.86	0.83	0.67	0.99
PM	0.74	1.12	1.00	0.97	0.88	0.87	0.84	0.67	0.99
IR	1.00	0.69	0.99	0.99	0.99	1.05	1.07	1.00	1.00
FET	0.74	1.13	0.98	0.94	0.85	0.83	0.81	0.63	1.13
HT, cancer	0.71	1.17	1.01	0.97	0.88	0.85	0.82	0.63	1.07
HT, non-cancer	0.79	1.06	1.01	0.98	0.91	0.91	0.89	0.74	1.00
LU	0.74	1.15	1.01	0.97	0.89	0.87	0.83	0.67	1.01

Table 4 Conversion factors for mandatory and additional indicators for product types of Engineered Quartz Slabs manufactured by M/s ARL Infratech Limited (mapped over entire life cycle, i.e., modules A-D)

PARAMETER	IrOx_85. 5	IrOx_86. 5	TiOx_83. 5	TiOx_84. 5	TiOx_85. 5	TiOx_86. 5	TiOx_87. 5	TiOx_88. 5	TiOx_89. 5
GWP - fossils	1.03	0.97	1.16	1.02	1.00	0.99	0.97	0.93	0.89
GWP - biogenic	0.98	0.97	1.02	1.00	1.00	1.01	1.01	1.01	1.00
GWP - luluc	1.04	0.98	1.16	1.03	1.00	0.98	0.95	0.91	0.87
GWP - TOTAL	1.03	0.97	1.16	1.02	1.00	0.99	0.97	0.93	0.89
ODP	1.11	1.07	1.23	1.04	1.07	1.09	1.13	1.13	1.06

AP	1.01	0.97	1.09	1.01	1.00	0.99	0.98	0.97	0.94
EP - freshwater	1.02	0.97	1.12	1.01	1.00	0.99	0.98	0.95	0.92
EP - marine	1.01	0.98	1.08	1.01	1.00	0.99	0.99	0.97	0.95
EP - terrestrial	1.01	0.98	1.07	1.00	1.00	0.99	0.99	0.98	0.95
POCP	1.03	0.97	1.16	1.02	1.00	0.98	0.96	0.92	0.88
ADP - met. & min	1.03	0.94	1.22	1.03	1.00	0.98	0.94	0.89	0.84
ADP - fossil	1.04	0.97	1.18	1.03	1.00	0.98	0.96	0.92	0.87
WDP	1.01	0.97	1.11	1.02	1.00	0.99	0.98	0.95	0.92
PM	1.01	0.97	1.11	1.01	1.00	0.99	0.98	0.95	0.92
IR	1.01	0.98	1.09	0.94	0.98	1.01	1.05	1.07	1.00
FET	1.05	0.97	1.23	1.04	1.01	0.99	0.97	0.92	0.86
HT, cancer	1.05	0.98	1.17	1.02	1.00	0.98	0.96	0.92	0.88
HT, non-cancer	1.02	0.96	1.15	1.01	1.00	0.99	0.97	0.95	0.90
LU	1.02	0.97	1.12	1.02	1.00	0.99	0.97	0.94	0.91

PARAMETER	TiOx_9 0.5	Ti- IrOx_83.5	Ti- IrOx_85.5	Ti- IrOx_86.5	Ti- IrOx_87.5	Ti- IrOx_88.5	Ti- IrOx_89.5	Ti- IrOx_91.5	Slab - No Pigments
GWP - fossils	0.85	1.07	1.00	0.98	0.93	0.93	0.91	0.81	1.01
GWP - biogenic	1.00	0.98	0.99	0.99	0.99	0.99	1.00	0.99	0.99
GWP - luluc	0.83	1.10	1.01	0.99	0.93	0.92	0.90	0.79	1.01
GWP - TOTAL	0.85	1.07	1.00	0.98	0.94	0.93	0.91	0.81	1.01
ODP	1.04	0.85	0.81	0.81	0.80	0.84	0.85	0.78	1.65
AP	0.92	1.03	1.00	0.99	0.96	0.96	0.95	0.89	1.00
EP - freshwater	0.89	1.04	1.00	0.99	0.95	0.95	0.94	0.86	1.00
EP - marine	0.93	1.02	1.00	0.99	0.97	0.97	0.96	0.91	1.01
EP - terrestrial	0.94	1.01	1.00	0.99	0.97	0.97	0.97	0.92	1.00
POCP	0.84	1.09	1.01	0.99	0.93	0.92	0.90	0.80	1.01
ADP - met. & min	0.78	1.13	1.01	0.98	0.91	0.89	0.86	0.72	0.99
ADP - fossil	0.82	1.10	1.01	0.98	0.92	0.91	0.89	0.78	1.02
WDP	0.90	1.06	1.00	0.99	0.95	0.95	0.93	0.87	0.99
PM	0.90	1.05	1.00	0.99	0.95	0.95	0.94	0.87	1.00
IR	1.00	0.69	0.99	0.99	0.99	1.05	1.07	1.00	1.00
FET	0.80	1.10	0.98	0.95	0.89	0.87	0.85	0.71	1.10
HT, cancer	0.83	1.10	1.01	0.98	0.93	0.92	0.90	0.79	1.04
HT, non-cancer	0.87	1.04	1.00	0.99	0.94	0.94	0.93	0.84	1.00
LU	0.88	1.07	1.00	0.99	0.95	0.94	0.93	0.85	1.00

- No release of dangerous substances into indoor air, soil, and water during the use stage is estimated as per information available with M/s ARL Infratech Limited
- The product is intended to be used as kitchen/bathroom countertop installation manufactured from natural stone aggregates and hence does not necessitate any special energy or water use advisory or guideline with respect to handling or use of the product
- The product does not require specific maintenance, servicing, or operational energy input during its use stage. To maintain the aesthetic quality and durability of the surface, routine cleaning with water and mild household cleaning agents is generally sufficient. The use of abrasive cleaners or highly aggressive chemicals is not required under normal conditions. Following standard cleaning practices may support long product service life and minimise the need for replacement, thereby contributing to reduced resource consumption over the life cycle
- As the product is supplied as a single consolidated slab without replaceable components, no individual parts have been identified as determining durability
- At the end of its service life, the product may be removed as construction and demolition waste; hence no environmental credits for recycling or material recovery are therefore assigned

- At the end of its service life, the product may be removed during renovation or demolition activities. Where feasible, intact slabs may be reused in secondary applications such as countertops, wall cladding, or other interior installations. If reuse is not possible, the material may be handled as construction and demolition waste and disposed of in accordance with applicable local regulations. In the present assessment, the end-of-life scenario assumes disposal through sanitary landfilling of inert construction waste. No environmental credits for reuse or recovery are included in the declared results
- Sustainable development goals – M/s ARL Infratech Limited:
 - As a global organisation, the company aligns its sustainability approach with the United Nations Sustainable Development Goals (SDGs). The Sustainable Development Goals (SDGs) were established within the United Nations Agenda for Sustainable Development and provide a framework for addressing key social, environmental, health, and economic challenges. The framework comprises 17 goals, each supported by defined targets.
 - As part of its sustainability approach, the company aligns its operational practices, product development, and social initiatives with relevant United Nations Sustainable Development Goals (SDGs). This alignment reflects the organisation's commitment to responsible manufacturing, environmental stewardship, and positive social contribution.



Moving towards a healthier lifestyle

ARL Infratech Limited's product design prioritises hygienic, durable, and low-emission surface solutions intended to support healthy indoor environments. Compliance with recognised product safety and quality standards contributes to user health and safety throughout the product life cycle. Furthermore, GREENGUARD and GREENGUARD GOLD certifications confirm the company's adherence to stringent environmental standards.



Inclusive and equitable education through skill development

Through corporate social responsibility initiatives, including partnerships with non-governmental organisations, the company supports programmes focused on child development and educational empowerment, contributing to improved access to learning and creative development opportunities. Collaboration with CRY India and support for children's artistic development contributes to skill-based learning.



Water management for effective utilization and waste minimization

Water stewardship is addressed through the recycling and reuse of water within manufacturing processes, reducing freshwater withdrawal and minimising wastewater discharge. These measures support improved water use efficiency across operations.



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

The organisation supports sustainable economic growth through ongoing investments in manufacturing capacity, technology, and workforce development. These activities contribute to employment generation and stable industrial growth within the regions of operation.



Resilient infrastructure, inclusive and sustainable industrialisation

The company invests in advanced manufacturing technologies and continuous research and development to enhance product quality, operational efficiency, and environmental performance. Automation and modern production systems support innovation while contributing to consistent and controlled manufacturing processes.



Ensure sustainable consumption and production patterns

The company implements environmental management practices aimed at improving resource efficiency and minimising waste generation. Manufacturing operations are supported by an ISO 14001–certified Environmental Management System, alongside initiatives such as water recycling, reuse of process waste, and the implementation of a zero-waste policy. Product durability and long service life further contribute to reduced material consumption over the use phase.

17 PARTNERSHIPS
FOR THE GOALS



Strengthen the means of implementation through collaborations

The company engages in collaborative partnerships with social organisations and stakeholders to support shared sustainability objectives. These partnerships strengthen the effectiveness and reach of social and environmental initiatives beyond the organisation's direct operations.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared

REFERENCES

- a) General Programme Instructions of International EPD System. Version 5.0.1
- b) PCR 2019:14. Construction Products. Version 2.0.1
- c) ISO 14040:2006. Environmental management. Life cycle analysis. Principles and framework
- d) ISO 14044:2006. Environmental management. Life cycle assessment. Requirements and guidelines
- e) EN 15804:2012+A2:2019, Sustainability of construction works – Environmental
- f) EPD International AB, 2024. *EPD-IES-0016897:001 Caesarstone Mineral™ Surfaces*. The International EPD System. Available online: [EPD Library 16897](#)

VERSION HISTORY

Version 1, 2026-06-04

- Original Version of the EPD

Version 2, 2026-06-30

- Minor editorial update has been done

