

Sustainability Summary



Lapitec S.p.A. is an Italian company, part of the Breton Group, based near Treviso in the north of Italy.

Lapitec S.p.A. developed in more than 20 years the equipment and technology for the production of a new material: the sintered stone.

Sintered stone is an industrial product made of a wet mixture of natural minerals, without use of resin or cement, cold-formed by means of vibro-compression under vacuum and consolidated, after drying, by sintering.

Sintered stone is full body, workable as natural stone upon the entire thickness, put on the market in the form of rough slabs, slabs, tiles and any other cut to size products.

Lapitec sintered stone is suitable for internal and external claddings, such as floorings, walls and ventilated facades, kitchen countertop and interior design element.

It is installed with use of adhesives, mechanical fixings or structural bonding. Lapitec S.p.A. operates all around the world, involved in different markets such as construction, architecture and interior design.

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Lapitec mission

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1.1 Environmental responsibility

Since the beginning of its activity, Lapitec S.p.A. promotes environmental responsibility by using natural materials for its production. Lapitec slabs are a 100% natural product. Homogeneous raw materials mixture is mainly made with natural minerals, without any chemical product. During all production process any kind of binder is avoided, and thanks to Breton technology large-size slabs can be produced without any chemical ingredient.

Thanks to its formula, it responds correctly to the criteria of sustainability that are promoted in the BREEAM, LEED and most internationally known rating systems. It is also accompanied by the Environmental Product Declaration (EPD) that evaluates the entire life cycle of the building materials with a particular attention to the use of the resources (energy, water, etc.) and the emissions on water, air and soil.



LAPITEC

Environmental
Product Declaration





**Certified
sustainability**

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Sustainability is a global concern that affects every sector of the economy. According to the United Nations, buildings and construction still account for 36% of global final energy use and 39% of energy-related carbon dioxide (CO₂) emissions¹. As a consequence, sustainability rating systems have been implemented worldwide to drive building design, construction and operation towards targets of greater environmental responsibility and resource efficiency, through best practices of green building and neighborhood development.

Sustainability rating systems are generally voluntary schemes that are structured through impact categories, which include various measurable compulsory and optional requirements, whose compliance and verification define the “sustainability score” of the building or neighborhood and their certification level accordingly. The certification attainable through sustainability rating systems is the recognition of the achievement and verification of globally accepted standards that make a building or a neighborhood green. Materials and products play a vital role in affecting the sustainability of the built environment and its environmental impacts. Building material choices are likewise crucial to keep indoor environments safe and healthy. Also, paving and exterior building materials

affect the outdoor microclimate due to the heat island effect. Therefore, material and product selection represent a critical step in the sustainable construction process. Green building principles and rating systems generally evaluate materials through a life-cycle approach, which considers the environmental impact of products through their life-cycle stages. In order for a product to be considered truly “sustainable”, it needs to comply with specific requirements which comprise the certification of its characteristics according to certain standards. In particular, environmental labels are an internationally recognized means of communicating the environmental characteristics of products in response to consumer demand for information. Transparency about the environmental impacts, responsible sourcing and supply chain, chemical characteristics affecting health and wellbeing of occupants (e.g. VOC – Volatile Organic Compounds – content and emissions) have become essential criteria to evaluate the sustainability quality of construction products.

Material strategies are therefore considered a critical topic by sustainability rating systems. The use of sustainable products, certified with environmental and health-related labels, and capable of meeting the requirements of

sustainability rating systems, has become a primary goal for architects, client and contractors that want to remain competitive in the contemporary construction industry and in the green building market. Knowing that a product allows to meet the credit requirements of a certain sustainability rating system constitutes an assurance for industry stakeholders that the use of that product will contribute to the achievement of that sustainability certification for the project.

This document demonstrates the green quality of Lapitec® by focusing on its characteristics that contribute towards the compliance with the environmental and health-based product requirements of main sustainability rating systems implemented worldwide.

A brief description of these sustainability rating systems and their focus areas on construction products is included in the next 3 pages.

(1) UN Environment and International Energy Agency (2017): *Towards a zero-emission, efficient, and resilient buildings and construction sector. Global Status Report 2017.*

2.2 Sustainability rating systems (1 of 3)

LEED® www.usgbc.org

Leadership in Energy and Environmental Design is a voluntary rating system that assesses and certifies the sustainability level of buildings. It is the most widely used green building rating system in the world and in Europe. Developed since 1993 by the U.S. Green Building Council (USGBC®), it is a structured scheme for the implementation of measurable environmental strategies during the design, construction and operation of sustainable buildings. The “Materials and Resources” category, in particular, focuses on minimizing the embodied energy and other impacts associated with the extraction, processing, transport, maintenance and disposal of building materials, through prerequisites and credits that support a life-cycle approach to promote resource efficiency. The ability of materials to reject solar heat aimed to improve outdoor microclimate is considered by the “Sustainable Site” category through the “Heat Island Reduction” credit. Implications of materials on indoor environmental conditions and health of occupants are assessed primarily through the credits of the “Indoor Environmental Quality” category.

WELL™ www.wellcertified.com

WELL is the leading rating system that promotes health and wellbeing in buildings and communities. WELL Certified™ spaces help create buildings that improve the nutrition, fitness, mood, sleep patterns, productivity and performance of its occupants. WELL is composed of over 100 features applied to a building project. Material characteristics primarily affect “Air”, “Mind” and “Sound” categories of wellness and are critical to achieve many of their features.

Living Building Challenge www.living-future.org

Living Building Challenge is the most advanced and demanding sustainability standard in the world. It is a philosophy, an advocacy tool and a certification program that addresses development at all scales. The Living Building Challenge protocol is composed by twenty Imperatives organized into seven categories called “Petals”. The goal is to enhance projects – Buildings for the construction of new buildings, Renovations for major renovations, Landscape and Infrastructure for parks and infrastructures, Neighborhood for neighborhoods, campuses, districts or villages – to become regenerative with a positive impact on the site and the environment in which these are located. Through the Imperatives included in the “Materials” petal, the rating system aims to foster a materials economy that is non-toxic, ecologically restorative, transparent, and socially equitable.

BREEAM www.breeam.com

Building Research Establishment Environmental Assessment Method

BREEAM is a sustainability assessment method launched in 1988 by the Building Research Establishment (BRE) in the United Kingdom. BREEAM is one of the longest-lasting established method of assessing, rating, and certifying the sustainability of buildings. It evaluates the procurement, design, construction and operation of a development against a range of targets based on performance benchmarks. Through a scorecard system, BREEAM assess the environmental, social and economic sustainability performance of the whole building's life cycle. The categories "Materials" and "Health and Wellbeing" are specifically affected by the environmental impact and health effects of materials used in the project.

BEAM Plus www.beamsociety.org.hk/

Building Environmental Assessment Method

BEAM is the rating system aimed to drive the creation of healthier, more efficient and sustainable buildings in Hong Kong. It was created from a voluntary private sector initiative conceived in 1996, and now includes three main protocols (New Buildings, Existing Buildings, Interiors). BEAM Plus v1.2 comprises 80 best practice criteria divided in 5 main environmental performance categories (plus an "Innovations and Additions" category), of which "Material Aspects" and "Indoor Environmental Quality" are those that primarily look at the environmental impacts and health implications of materials. The "Microclimate Around Buildings" criterion in the "Site Aspects" category considers the performance of paving and roofing materials in rejecting solar heat.

BCA Green Mark www.bca.gov.sg

Building and Construction Authority

BCA is a green building rating system launched in Singapore that provides a comprehensive framework for assessing the overall environmental performance of new and existing buildings to promote sustainable design, construction and operations practices. These practices are mapped to 4 major internationally recognized sustainability outcomes (Climate, Resources, Wellbeing, Ecology) and are structured in 5 sections, with 16 criteria and 52 sustainability indicators. The environmental impacts of materials and their effects on indoor environmental quality are specifically addressed by the "Resource Stewardship" and "Smart and Healthy Buildings" sections.

The ability of exterior building surfaces and paving materials to reject solar heat is considered by the "Climatic Responsive Design" section through the "Sustainable Urbanism" indicator.

DGNB www.dgnb-system.de/en
Deutsche Gesellschaft für Nachhaltiges Bauen

The DGNB rating system was developed by the German Sustainable Building Council and provides an objective description and assessment of the sustainability quality of buildings and urban districts, over their entire life cycle. DGNB assesses 50 criteria that are organized in 5 quality sections (Site, Technical, Socio-cultural and Functional, Economic, Environmental, Process Quality). The “Environmental Quality” section includes the evaluation of the local environmental impact of building on resources due to the characteristics of materials, the related waste generation, the transparency on environmental and social impact of products throughout their value chain. The “Socio-Cultural and Functional Quality” section however assesses the implications of materials on users’ health and comfort.

Greenship www.gbcindonesia.org

Greenship is a green building assessment and certification scheme developed by the Green Building Council of Indonesia, which comprises three rating tools (New Buildings, Existing Buildings, Interior Spaces). The New Buildings tool accounts 101 credits (+5 bonus) for the end-stage assessment (the Design Recognition award has a maximum of 77 credits), divided in six areas. “Material Resources & Cycle” and “Indoor Air Health & Comfort” are the categories of credits that primarily deal with the environmental and health effects of products used in buildings.

Pearl Building Rating System www.upc.gov.ae

The Pearl Building Rating System is a green building rating system developed by the Abu Dhabi Urban Planning Council as part of their sustainable development initiative “Estidama”, with the goal of promoting the development of sustainable buildings and improving quality of life. There are three stages of certification: Pearl Design Rating, tied to the building permit; Pearl Construction Rating, tied to the certificate of completion; Pearl Operations Rating, assessing the operating phase. All new projects must achieve a minimum 1 Pearl rating to receive approval from the planning and permitting authorities. Government funded buildings must achieve a minimum 2 Pearl rating. The rating system is organized into seven categories including mandatory and optional credits. The “Material Stewardship” category ensures consideration of the whole life cycle while selecting materials, whereas “Livable buildings” assesses the quality of indoor spaces which is affected by materials and finishes. Specific credits in the “Liveable Buildings: Outdoor” and “Resourceful Energy” categories address the solar reflectance and emittance performance of roofing and paving materials.



Lapitec®:
a sustainable
product

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Today, more than ever, the built environment must be planned and designed to preserve natural resources, protect and restore the habitats, and foster the wellbeing of people. This socio-ecological consciousness has been the driving force for the Lapitec® project, which is produced respecting the environment and health of people, thinking and about the future generations without damaging our planet.

Lapitec® is a green product throughout its life-cycle stages: from production to processing, use and end of life, through an approach inspired by a cradle-to-cradle philosophy. Lapitec® does not contain any raw material obtained through petroleum processing. Lapitec® is completely inert and does not release any substance into the environment. When scrapped, it could be milled to be recycled as an aggregate or can be simply disposed in normal waste treatment plants for treating inert waste products. Furthermore, when used for cladding ventilated façades, Lapitec® offers improved thermal insulation compared to other cladding products on the market.

The ecological approach embraces also the manufacturing process and the strategy for the operation of the company. Lapitec S.p.A, coherent with an environmentally sustainable “Green” policy, has indeed decided to use renewable energy sources for the manufacturing of its products. Solar energy in fact supplies photovoltaic panels installed on the roofs of the 18,000 m² premises.

The sustainability quality of Lapitec® is recognized through the certifications of its characteristics and its contribution towards the requirements of sustainability rating systems. The table in the next 3 pages shows how a synthesis of the main characteristics of Lapitec® that contribute towards the environmental and health-based product requirements of the worldwide implemented sustainability rating systems discussed in section no. 2. The table lists the main environmental certifications and sustainability indicators of Lapitec®⁽²⁾, and highlights the categories/areas and relevant credits of the sustainability rating systems that these characteristics contribute to. For example, the availability for Lapitec® of product-specific type III Environmental Product Declaration (EPD) is highly regarded by sustainability rating systems that promote the transparency of life-cycle information regarding the environmental impacts of construction products (e.g. LEED, BREEAM), and contributes to their relevant requirements related to the materials and products installed in the project.

Furthermore, light-colored Lapitec® products have a Solar Reflectance Index (SRI) and Solar Reflectance (SR) value that allow to classify them as high-reflectance roofing and non-roofing materials according to sustainability rating systems such as LEED, therefore contributing to mitigating the heat island effect. In terms of health-based criteria, the compliance of Lapitec® with the REACH – Registration, Evaluation, Authorization and Restriction of Chemicals – regulation (no ingredients on the REACH “Authorization”, “Candidate” or “Restriction” Lists), and the achievement of the GREENGUARD and GREENGUARD Gold certifications are not only a proof of the safeguard of human health due to the low levels of hazardous chemical substances and VOC emissions, but also constitute other important indicators that sustainability rating systems reward.

The disclosure of contents of chemical ingredients of Lapitec® through a Health Product Declaration (HPD) is a further sustainability criterion considered by rating systems such as LEED and WELL to promote the transparency on health information of construction products. The table below supports and facilitates the work of industry professionals by providing an overview that shows the potential advantages of using Lapitec® to pursue sustainability certifications of projects. The table is therefore a resourceful decision-making tool for clients, contractors, planners, architects, interior designers, engineers and sustainability consultants involved in selecting or comparing construction products to achieve sustainability targets for their projects. The table clearly shows the strength and versatility of Lapitec® as a sustainable product that can contribute to many requirements of the most important sustainability rating systems used worldwide.

(2) For the detailed performance specifications of each product of the Lapitec® family, please contact architectural@lapitec.com to request the specific product data sheet.

Table (section 1 of 3)
Certifications and characteristics of Lapitec® vs. sustainability rating systems

	Rating system: <u>LEED</u>	Rating system: <u>WELL</u>	Rating system: <u>Living Building Challenge</u>
	Starting: 1993 / Nationality: USA Application: Building Design and Construction Operation and Maintenance; Building Operation and Maintenance Homes; Neighborhood Development Geographical validity: worldwide Founder society: USGBC Protocol: LEED V4 BD+C:NC,LEED V4.1 BD+C:NC	Starting: 2014 / Nationality: USA Application: Building, Interiors, Core and Shell Geographical validity: worldwide Founder society: IWBD Protocol: WELL v1 Building Standard, WELL v2 Building Standard	Starting: 2006 / Nationality: USA Application: Buildings, Renovations, Landscape + Infrastructures Geographical validity: worldwide Founder society: International Living Future Institute Protocol: Living Building Challenge 3.1
SRI (Solar Reflectance Index) <u>ASTM E 1980</u> SR (Solar Reflectance) <u>ASTM E903 and E892</u>	Sustainable Site credit: Heat Island Reduction		
EPD (Environmental Product Declaration) <u>ISO 14025-2006 and EN 1580</u>	Materials and Resources credit: Bulding Product Disclosure and Optimization - Environmental Product Declarations		
LCA (Life-Cycle Assessment) <u>ISO 14040-2006 and ISO 14044-2006</u>	Materials and Resources credit: Bulding Product Disclosure and Optimization - Environmental Product Declarations		
HPD (Health Product Declaration)	Materials and Resources credit: Bulding Product Disclosure and Optimization - Material Ingredients	Mind optimization: Material Transparency Materials optimization: Material Transparency	
REACH	Materials and Resources credit: Bulding Product Disclosure and Optimization - Material Ingredients		
VOC emission	Indoor Environmental Quality credit: Low-Emitting Materials	Air precondition: VOC Reduction Materials optimization: Volatile Compound Reaction	Materials imperative: Red List

Table (section 2 of 3)
Certifications and characteristics of Lapitec® vs. sustainability rating systems

	Rating system: <u>BREEAM</u>	Rating system: <u>BEAM Plus</u>	Rating system: <u>DGNB System</u>
	Starting: 1990 / Nationality: UK Application: Communities; Infrastructure; New Construction; In-Use; Refurbishment & Fit-Out Geographical validity: worldwide Founder society: BRE Protocol: BREEAM International New Construction 2016 v2.0	Starting: 2010 / Nationality: Honk Kong Application: New Buildings; Existing Buildings; Interiors; Neighbourhood" Geographical validity: worldwide Founder society: HKGBC Protocol: BEAM Plus New Buildings (v.1.2)	Starting: 2007 / Nationality: Germany Application: Existing Buildings; New Construction; Interiors; Districts Geographical validity: worldwide Founder society: DGNB Protocol: DGNB System New Construction Building (2018)
SRI (Solar Reflectance Index) <u>ASTM E 1980</u> SR (Solar Reflectance) <u>ASTM E903 and E892</u>		SA8 Microclimate Around Buildings	
EPD (Environmental Product Declaration) <u>ISO 14025–2006 and EN 1580</u>	MAT 01 Life cycle impacts		
LCA (Life-Cycle Assessment) <u>ISO 14040–2006 and ISO 14044–2006</u>	MAT 01 Life cycle impacts		
HPD (Health Product Declaration)			
REACH			ENV 1.2 Local Environmental Impact
VOC emission	HEA 02 Indoor air quality	IEQ 7 Indoor Sources of Air Pollution (use of products with low emission contribute to create healthy environment)	ENV 1.2 Local Environmental Impact

Table (section 3 of 3)
Certifications and characteristics of Lapitec® vs. sustainability rating systems

	Rating system: <u>GreenShip</u>	Rating system: <u>PEARL Estidama</u>	Rating system: <u>BCA Green Mark</u>
	Starting: 2009 / Nationality: Indonesia Application: New Buildings; Existing Buildings; Interior Spaces; Homes; Neighbourhood Geographical validity: Indonesia Founder society: GBC Indonesia Protocol: GREENSHIP New Building (v1.1)	Starting: 2010 / Nationality: Abu Dhabi Application: Buildings; Villas; Community Geographical validity: Emirates Founder society: Estidama Protocol: Pearl Rating System for Estidama (v1.0)	Starting: 2009 / Nationality: Singapore Application: Non Residential Buildings Geographical validity: Singapore Founder society: SGBC Protocol: Green Mark Non-residential buildings: 2015
SRI (Solar Reflectance Index) <u>ASTM E 1980</u> SR (Solar Reflectance) <u>ASTM E903 and E892</u>	ASD 6 Micro Climate	LBo-R3 Outdoor Thermal Comfort Strategy LBo-1 Improved Outdoor Thermal Comfort RE-2 Cool Building Strategies	1.2a Sustainable Urbanism
EPD (Environmental Product Declaration) <u>ISO 14025-2006 and EN 1580</u>			
LCA (Life-Cycle Assessment) <u>ISO 14040-2006 and ISO 14044-2006</u>			
HPD (Health Product Declaration)			
REACH			
VOC emission			4.1c Indoor Contaminants

Glossary

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Solar Reflectance (SR) and Solar Reflectance Index (SRI)

Solar Reflectance is the fraction of solar energy reflected by a surface. The SR value is a number from 0 to 1.0. A value of 0 (black paint) indicates that the material absorbs all solar energy, whereas a value of 1.0 (white paint, titanium dioxide) indicates total reflectance.

The Solar Reflectance Index is calculated according to ASTM E 1980 using values for solar reflectance and thermal emittance. Emittance is a material's ability to release thermal heat. SRI is therefore a measure of the constructed surface's ability to reflect solar radiation and emit thermal radiation. The higher the SRI value, the lower the temperature of the surface exposed to sunlight. A standard black surface has an initial SRI of 0, whereas a standard white surface has an initial SRI of 100. Since the calculation method is based on reference surfaces and relevant values, the SRI may be higher than 100.

Environmental Product Declaration (EPD)

An EPD is an independently verified and registered document that provides in a standardized way the environmental impacts (e.g. global warming potential, depletion of abiotic resources, acidification potential) of a product or system. The way to standardize the information for a specific product type is defined by the relevant Product Category Rule (PCR), which is consistent with EN 15804.

A Type III EPD includes data from a Life-Cycle Assessment (LCA) of the product or system and is defined by the relevant PCR so that all EPDs for that product type are comparable. Type III EPDs conform to ISO 14025 or ISO 21930.

Lapitec® has a product-specific Type III EPD, which is specific for a certain manufacturer and uses third-party certification that includes verification. For these reasons, product-specific Type III EPDs generally are the most highly recognized and rewarded by the credits about materials of sustainability rating systems (e.g. LEED).

Life Cycle Assessment (LCA)

LCA is an evaluation of the potential environmental impacts of a product system throughout its life cycle, based on ISO 14040 and ISO 14044 standards. An LCA provides a comprehensive picture of a product, enabling project teams to make more informed decisions in relation to its environmental impacts.

Health Product Declaration (HPD)

HPD is an open standard specification (in accordance with the directions of the Health Product Declaration Collaborative) for the accurate and consistent reporting of contents of chemical substances and associated health information of products used in the built environment. The HPD specification is harmonized with many programs and certification standards in the building industry. An HPD is developed by screening individual chemical ingredients of a product on the basis of specific thresholds, against the Priority Hazard Lists and the GreenScreen for Safer Chemicals®. It is a valuable addition to lifecycle-based reports such as LCA and EPD. For compliance with the relevant LEED credit requirements, the HPD standards for the 1,000-ppm level must be attained.

GREENGUARD and GREENGUARD Gold

GREENGUARD and GREENGUARD Gold certifications are based on a review of the manufacturing process and routine testing to help ensure minimal impact of building products and furnishings on the indoor environment in terms of indoor air pollution and risk of chemical exposure. Products with GREENGUARD Certification are proven to meet rigorous, third-party chemical emissions standards. The GREENGUARD Gold Certification includes health-based criteria for additional chemicals and requires lower total VOC emissions levels to help ensure that products are acceptable for use in sensitive environments like healthcare facilities and schools. The GREENGUARD Gold certification is included in the list of acceptable certifications and programs for LEED Indoor Environmental Quality Credit Low-Emitting Materials, with regard to general emissions evaluation and furniture evaluation (GREENGUARD certification is included in the list as well, but only for furniture evaluation). The general emissions evaluation is the parameter that is used by LEED to evaluate the compliance of flooring materials with VOC emissions and content requirements.

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

REACH is a regulation of the European Union (1907/2006/EC) which aims to improve the protection of human health and the environment from the risks that can be created by chemicals, through the better and earlier identification of the intrinsic properties of chemical substances. The REACH regulation requires companies manufacturing or importing chemical substances into the European Union in quantities of 1 tonne or more per year to register these substances with a new European Chemicals Agency in Finland. REACH also restricts the continued use of chemical Substances of Very High Concern (SVHC) because of their potential negative impacts on human health or the environment. REACH provides an “Authorization List” (chemicals that can only be used with special authorization), a “Candidate List” (chemicals being considered for the Authorization List) and a “Restriction List” (substances restricted under REACH based on specific restriction conditions).



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