



## LEED CREDITS

(The Leadership in Energy and Environmental Design)

PANARIA Ceramica is a member of the **U.S. Green Building Council**: this is an organisation that promotes buildings that are environmentally friendly, profitable and healthy places to live and work in.

**SS Credit 7.1 - HEAT ISLAND EFFECT / Non roof (NC, CI, CS, SCHOOLS LEED Rating Systems): 1 LEED point** is granted for the use of hardscape materials with SRI  $\geq 29$ . The great majority of PANARIA products **do not contribute to change the energy balance of the environments where they are installed**. They do not produce any Urban Heat Island Effect, thanks to their very good physical properties, i.e. Solar Reflectance Index SRI  $\geq 29$ .

### EA Credit 1 - OPTIMIZE ENERGY PERFORMANCE (NC, CI, CS, SCHOOLS LEED Rating Systems)

**The Thermal conductivity  $\lambda$**  of PANARIA porcelain tiles is 0.75 Btu/ft h °F (1,3 Watt/m<sup>2</sup>K or 1,1 Kcal/m h °C). For this reason it is ideal for heating floor systems and external cladding.

**The Thermal conductivity  $\lambda$**  of PANARIA wall tiles is 0.4 Btu/ft h °F (0,7 Watt/m<sup>2</sup>K or 0,6 Kcal/m h °C).

**MR Credit 2 - CONSTRUCTION WASTE MANAGEMENT (NC, CI, CS, SCHOOLS LEED Rating Systems): 2 LEED points** are granted if at least 75% of the weight of Raw materials - tiles and packing will be recycled. **PANARIA tiles** and their **packing material** (carton boxes, plastic packaging materials, wooden pallets, straps, etc.) **are 100% recyclable**. The management of the waste on the building site is also easier because the quantity of waste is very small (weight of packaging is around 2-3% of weight of total material).

**MR Credit 4 - RECYCLED CONTENT (NC, CI, CS, SCHOOLS LEED Rating Systems): 2 LEED points** are granted if the “% post-consumer waste + ½ % pre-consumer waste  $\geq 20\%$  of the total raw materials, based on cost.”

**The great majority of PANARIA products are produced with 40% of pre-consumer recycled materials**, as certified by a qualified external company. The certificate is available on the website [www.panaria.it](http://www.panaria.it).

**MR Credit 5 - REGIONAL MATERIALS (NC, CS, SCHOOLS LEED Rating Systems): 2 LEED points** are granted if the use of local raw materials is equal to 20% of the total materials value, based on cost.

- These Credits are applicable for buildings constructed within 500 miles (804,5 km) from PANARIA production sites (Finale Emilia MO, Italy; Toano RE, Italy; Fiorano Modenese MO, Italy; Aveiro, Portugal; Lawrenceburg Kentucky, USA). The % contribution based on cost of PANARIA tiles to a single LEED project is calculated based on the geographical position of the construction site.

### MR Credit 5 - REGIONAL MATERIALS (CI LEED Rating System only):

- **1 LEED point**: use a minimum of 20% of the combined value of construction and Division 12 (Furniture) materials and products that are manufactured regionally within a radius of 500 miles from PANARIA production sites (Finale Emilia MO, Italy; Toano RE, Italy; Fiorano Modenese MO, Italy; Aveiro, Portugal; Lawrenceburg Kentucky, USA).
- **2 LEED points**: meet the previous criterion requirement and use a minimum of 10% of the combined value of construction and Division 12 (Furniture) materials and products extracted, harvested or recovered, as well as manufactured, within 500 miles of the LEED project.

**IEQ Credit 4.1 - LOW EMITTING MATERIALS, ADHESIVES AND SEALANTS (NC, CI, CS, SCHOOLS LEED Rating Systems): 1 LEED point** is granted if all adhesives and sealants used on the interior of the building comply with SCAQMD Rule #1168 (VOC limit of ceramic adhesives not more than 65 g/l less water).

**IEQ Credit 4.3 - LOW EMITTING MATERIALS, FLOORING SYSTEMS (NC, CI, CS, SCHOOLS LEED Rating Systems): 1 LEED point** is granted if all flooring complies with the requirements indicated in IEQ Credit 4.3 Section.

PANARIA Ceramica tiles obtain 1 LEED point because they do not contain any Volatile Organic Compounds VOC (see LEED 2009 NC, CI, CS, SCHOOLS Rating Systems).

### IEQ Credit 4.6 - LOW EMITTING MATERIALS, CEILING and WALL SYSTEMS (SCHOOLS LEED Rating System only): 1 LEED point.

PANARIA Ceramica tiles obtain 1 LEED point because they do not contain any Volatile Organic Compounds VOC (see Addenda of LEED Reference Guide for Green Building Design and Construction, 2009 Edition).

### ID Credit 1 - INNOVATION IN DESIGN: 1-5 LEED points for NC, CI and CS, 1-4 LEED points for SCHOOLS

- **“Innovation in Design”**: the main collections of PANARIA Ceramica have got the prestigious ecological mark **ECOLABEL** (66/2010/CE), based on the product LCA (Life Cycle Assessment) and awarded by the EU only to those products with the lowest environmental impact.
- **“Innovation in Design”**: DISCOVER, DOGHE DI QUERCIA, BUXSTONE, EXPERIENCE, URBANATURE, BASALIKE, NORTH CAPE series and, upon request, also other products of PANARIA Ceramica, have got **antibacterial surfaces**, that reduce bacterial presence by up to 99.9% (ISO 22196 test method).
- **“Exemplary performances” MR Credit 2 - CONSTRUCTION WASTE MANAGEMENT: 1 LEED point** may be earned if at least 95% by weight of the Raw Materials - material and packing - will be recycled. PANARIA tiles and their packing material (carton boxes, plastic packaging materials, wooden pallets, straps, etc.) are **100% recyclable**.
- **“Exemplary performances” IEQ Credit 4.6 - LOW EMITTING MATERIALS, CEILING and WALL SYSTEMS: 1 LEED point** may be earned for NC, CI, CS LEED Buildings. No traces of VOC (Volatile Organic Compounds) are present in PANARIA tiles (see Addenda of LEED Reference Guide for Green Building Design and Construction, 2009 Edition).

### RP Credit 1- REGIONAL PRIORITY (NC, CI, CS, SCHOOLS LEED Rating Systems): 1-4 LEED points

Between 1 and 4 credits can be obtained, of the 6 Regional Priority credits identified by the USGBC regional councils and chapters, if the project has an environmental importance for the region, where it is being constructed. A database of Regional Priority credits and their geographic applicability is available on the USGBC website [www.usgbc.org](http://www.usgbc.org).

### EBOM LEED RATING SYSTEM - EXISTING BUILDINGS OPERATIONS and MAINTENANCE

The cleaning and maintenance procedures on PANARIA Ceramica's general catalogue can help obtain the following LEED credits.

- **SS Credit 7.1 - HEAT ISLAND REDUCTION (Non roof): 1 LEED point** is granted if a maintenance program is organized, that ensures the surfaces are cleaned at least every 2 years to maintain a good reflectance.
- **IEQ 3.1 - GREEN CLEANING, HIGH PERFORMANCE CLEANING PROGRAM: 1 LEED point.**
- **IEQ 3.3 - GREEN CLEANING, PURCHASE OF SUSTAINABLE CLEANING PRODUCTS AND MATERIALS: 1 LEED point**

**MR 3 - SUSTAINABLE PURCHASING, FACILITY ALTERATIONS AND ADDITIONS: 1 LEED point** is granted if the purchases contain at least 10% post-consumer waste and/or 20% pre-consumer waste material.

The great majority of PANARIA Ceramica products are produced with **40% of pre-consumer recycled materials**, as certified by a qualified external company. The certificate is available on the website [www.panaria.it](http://www.panaria.it).

**NC** = LEED 2009 for New Construction; **CI** = LEED 2009 for Commercial Interior; **CS** = LEED 2009 for Core and Shell Development; **SCHOOLS** = LEED 2009 for Schools; **EBOM** = LEED 2009 for Existing Buildings Operations and Maintenance.



## LEED ITALIA

PANARIA Ceramica is a member of the **Green Building Council ITALIA**, this is an organization that promotes in Italy buildings that are environmentally friendly, profitable and healthy places to live and work in.

The LEED credits that can be obtained with PANARIA tiles for NC 2009 Italia (New construction) are the same as the ones that can be obtained with USGBC LEED NC 2009 Rating System (please see table). The only differences are regarding credit **MR5 - REGIONAL MATERIALS** (different method of calculating the distance from the production site and raw materials from the construction site) and **IEQ 4.1 - LOW EMITTING MATERIALS, ADHESIVES AND SEALANTS** (max emissions VOC = 200 mg/m<sup>3</sup>, see GEV Emicode EC1 ed. 03.03.2009).



## LEED CREDITS

Panaria Ceramica is a member of the **U.S. GREEN BUILDING COUNCIL**: this is an organization that promotes buildings that are environmentally friendly, profitable and healthy places to live and work in.

**SS Credit 7.1 - Heat Island Effect / Non roof (NC, CI, CS, SCHOOLS LEED Rating Systems): 1 LEED point** is granted for the use of hardscape materials with SRI  $\geq 29$ .\* The great majority of ZERO.3 products (Aisthesis 0.3: Bianco, Paglierino, Sabbia; Doghe 0.3: Rovere Naturale, Rovere Oliato; Experience 0.3: Bianco Denso, Beige Tenue, Grigio Vivo; Lightquarz 0.3: Bianco, Beige, Grigio, Antracite) do not contribute to change the energy balance of the environments where they are installed. **They do not produce any Urban Heat Island Effect**, thanks to their very good physical properties, i.e. Solar Reflectance Index SRI  $\geq 29$ .

### EA Credit 1 - Optimize Energy Performance (NC, CI, CS, SCHOOLS LEED Rating Systems)

The **Thermal conductivity  $\lambda$**  of ZERO.3 porcelain tiles is 0.75 Btu/ft h °F (**1.3 Watt/m<sup>2</sup>K**). For this reason, thanks to its very low thickness, it is ideal for heating floors systems. Thermal transmittance: U = 65 Btu/ft<sup>2</sup> h °F / 371 W/m<sup>2</sup> °K (3 Plus), U = 42 Btu/ft<sup>2</sup> h °F / 236 W/m<sup>2</sup> °K (5 Plus)

**MR Credit 2 - Construction Waste Management (NC, CI, CS, SCHOOLS LEED Rating Systems): 2 LEED points** are granted if at least 75% of the weight of Raw materials – tiles and packing - will be recycled. ZERO.3 and its packing material (carton boxes, plastic packaging materials, wooden pallets, straps, etc..) are 100% recyclable. Furthermore, the on site management is very easy because the weight of waste materials for recycling is minimal:

- ZERO.3 weight: 3 mm = 7,5 kg/m<sup>2</sup> (178 lbs/sqf) / 3 Plus = 7,8 kg/m<sup>2</sup> (185 lbs/sqf) / 5 Plus = 11,5 kg/m<sup>2</sup> (273 lbs/sqf).
- Weight of packaging: only 2-3% of the total weight of the material

**MR Credit 5 - Regional Materials (NC, CS, SCHOOLS LEED Rating Systems): 2 LEED points** are granted if the use of local raw materials is equal to 20% of the total materials value, based on cost.

- These Credits are applicable for buildings constructed within 500 miles (804,5 km) from ZERO.3 production sites (Fiorano Modenese - Modena, Italy).
- The % contribution based on the cost of ZERO.3 tiles to a single LEED project is calculated based on the geographical position of the construction site.

### MR Credit 5 - Regional Materials (CI Rating Systems Only):

- **1 LEED Point:** use a minimum of 20% of the total value of materials and products that are manufactured regionally within a radius of 500 miles (804,5 Km) from ZERO.3 production sites (Fiorano Modenese - Modena, Italy).
- **2 LEED Points:** meet the previous criterion requirement and use a minimum of 10% of the total value of raw materials and products extracted, harvested or recovered, as well as manufactured, within 500 miles (804,5 Km) from LEED building.

**IEQ Credit 4.1 - Low Emitting Materials, Adhesives and Sealants (NC, CI, CS, SCHOOLS LEED Rating Systems): 1 LEED point** is granted if all adhesives and sealants used on the interior of the building comply with SCAQMD Rule #1168 (VOC limit of ceramic adhesives not more than 65 g/l less water).

**IEQ Credit 4.3 - Low Emitting Materials, Flooring Systems (NC, CI, CS, SCHOOLS LEED Rating Systems): 1 LEED point** is granted if all flooring complies with the requirements indicated in IEQ Credit 4.3 Section. ZERO.3 obtains 1 LEED point because it does not contain any Volatile Organic Compounds VOC (see LEED 2009 NC, CI, CS, SCHOOLS Rating Systems).

### IEQ Credit 4.6 - Low Emitting Materials, Ceiling and Wall Systems (SCHOOLS LEED Rating System only): 1 LEED point.

ZERO.3 obtains 1 LEED point because it does not contain any Volatile Organic Compounds VOC (see Addenda of LEED Reference Guide for Green Building Design and Construction, 2009 Edition).

### ID Credit 1 - Innovation in Design: 1-5 LEED points for NC, CI and CS, 1-4 LEED points for SCHOOLS.

- **“Innovation in Design”:** LIGHTQUARZ 0.3 serie and, upon request, also other products of PANARIA Ceramica, have got **antibacterial surfaces**, that reduce bacterial presence by up to 99.9% (ISO 22196 test method).
- **“Exemplary performances” MR Credit 2 - CONSTRUCTION WASTE MANAGEMENT: 1 LEED point** may be earned if at least 95% by weight of the Raw Materials - material and packing - will be recycled. ZERO.3 and its packing material (carton boxes, plastic packaging materials, wooden pallets, straps, etc..) are 100% recyclable.
- **“Exemplary performances” IEQ Credit 4.6 - LOW EMITTING MATERIALS, CEILING and WALL SYSTEMS: 1 LEED point** may be earned for NC, CI, CS LEED Buildings: no traces of VOC (Volatile Organic Compounds) are present in ZERO.3 tiles (see Addenda of LEED Reference Guide for Green Building Design and Construction, 2009 Edition).

### RP Credit 1- Regional Priority (NC, CI, CS, SCHOOLS LEED Rating Systems): 1-4 LEED points.

Between 1 and 4 credits can be obtained, of the 6 Regional Priority credits identified by the USGBC regional councils and chapters, if the project has an environmental importance for the region, where it is being constructed. A database of Regional Priority credits and their geographic applicability is available on the USGBC website [www.usgbc.org](http://www.usgbc.org)

### LEED Rating System of Existing Buildings Operations and Maintenance (EBOM)

The cleaning and maintenance procedures on Panaria Ceramica's general catalogue and on ZERO.3 technical manual can help obtain the following LEED credits:

- **SS Credit 7.1 - HEAT ISLAND REDUCTION (Non roof): 1 LEED point** is granted if a maintenance program is organized, that ensures the surfaces are cleaned at least every 2 years to maintain a good reflectance.
- **IEQ 3.1 - GREEN CLEANING, HIGH PERFORMANCE CLEANING PROGRAM: 1 LEED point.**
- **IEQ 3.3 – GREEN CLEANING, PURCHASE OF SUSTAINABLE CLEANING PRODUCTS AND MATERIALS: 1 LEED point.**

**NC** = LEED 2009 for New Construction

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The LEED credits that can be obtained with ZERO.3 tiles for NC 2009 Italia (New construction) are the same as the ones that can be obtained with USGBC LEED NC 2009 Rating System (please see table). The only differences are regarding credit **MR 5 – REGIONAL MATERIALS** (different method of calculating the distance from the production site and raw materials from the construction site) and **IEQ 4.1 - LOW EMITTING MATERIALS, ADHESIVE AND SEALANTS** (max emissions VOC = 200 mg/m<sup>3</sup>, v. GEV Emission EC1 ed. 03.03.2009).