

ZINTEK SRL



23/10/2023

The value of sustainability

Rev.4

The roof with sustainability at its heart

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ZINTEK Srl

THE ENVIRONMENT AND SUSTAINABILITY AT ZINTEK S.R.L.

1. THE ZINTEK® CLADDING SYSTEM

1.1 Product features

Zintek S.r.l. supplies cladding made of UNI EN 988-compliant rolled titanium-zinc for roofs and façades, sheet metal work and other cladding projects.



Natural zintek® is a bright, even and glossy grey rolled metal. When exposed to the weather, the surface develops a self-protecting layer, which remains stable over time and lends the surface a natural aged look, with a pleasant slate-grey appearance.

The rolled metal's natural appearance can be altered using special surface treatments, without affecting its corrosion-resistance properties. When a surface treatment is added, the metal is described as “pre-weathered”.

Unlike other materials, zintek® does not require any maintenance.

zintek® products must be transported in suitable covered vehicles that provide a dry, ventilated space. Similarly, loading and unloading must always be carried out in dry, ventilated and covered locations. Stock must be protected from moisture, and storing the material loose and outdoors should be avoided. Avoid directly covering the rolls and profiles if there are no ventilated gaps between each article. The formation of condensation should be avoided if the warehouse temperature falls below dew point. For further information, consult the manual “Development in Architecture” or ask the quality department.

All these product features have been further enhanced by the company's strategic decision to opt for a focused, highly specialized approach: this led the business to seek out other esteemed partners and so create a truly specialist supply chain that offers excellent value at a highly competitive price.

zintek® offers the following advantages in terms of sustainability:

- unlike other materials, rainwater collected in zintek® guttering is excellent for watering gardens, helping plants to grow and reducing the need to use drinking water for irrigation;



- unlike other materials, zintek® does not produce residues that can dirty or damage plaster and walls, meaning less need for maintenance and an improved appearance;

- when it comes into contact with water, it forms a highly stable basic zinc carbonate surface coating, giving it excellent corrosion resistance and therefore an extremely long lifespan (up to 100 years in rural environments);

- once installed, it does not require any maintenance or special protective treatments, significantly reducing maintenance costs;

- the building's value remains unchanged over time;

- it is malleable and easy to work with, allowing architects to express themselves in complete freedom;

- it complies fully with current environmental protection rules;

- it is fully recyclable and reusable, and holds its value well;

- when paired with a ventilation system it reduces moisture and limits heat buildup;

- it helps save energy when used as a cladding layer combined with a high-performance layered system.



2. HOW ZINTEK® INCREASES BUILDINGS' SUSTAINABILITY

2.1 Sustainability of materials

Just as Zintek S.r.l.'s cladding systems comprise numerous materials, so the company offers many different ways to reduce one's environment impact.

The functional layers beneath the zintek® surface can be made of either metal or wood. The company has opted to maximize the sustainability of its wood with a traceable supply chain, which essentially offers the following advantages:

- FSC-certified wood: It is vital that wood is harvested and processed sustainably since, although wood is a natural and renewable material, it takes time to regrow. In addition, if the process is not managed sustainably, using wood has a negative impact on the environment, exacerbating the deforestation currently taking place across the world. FSC certification guarantees that the wood is harvested, managed and processed effectively, and gives forests time to regenerate.

Other factors are also taken into consideration to limit the company's environmental impact:

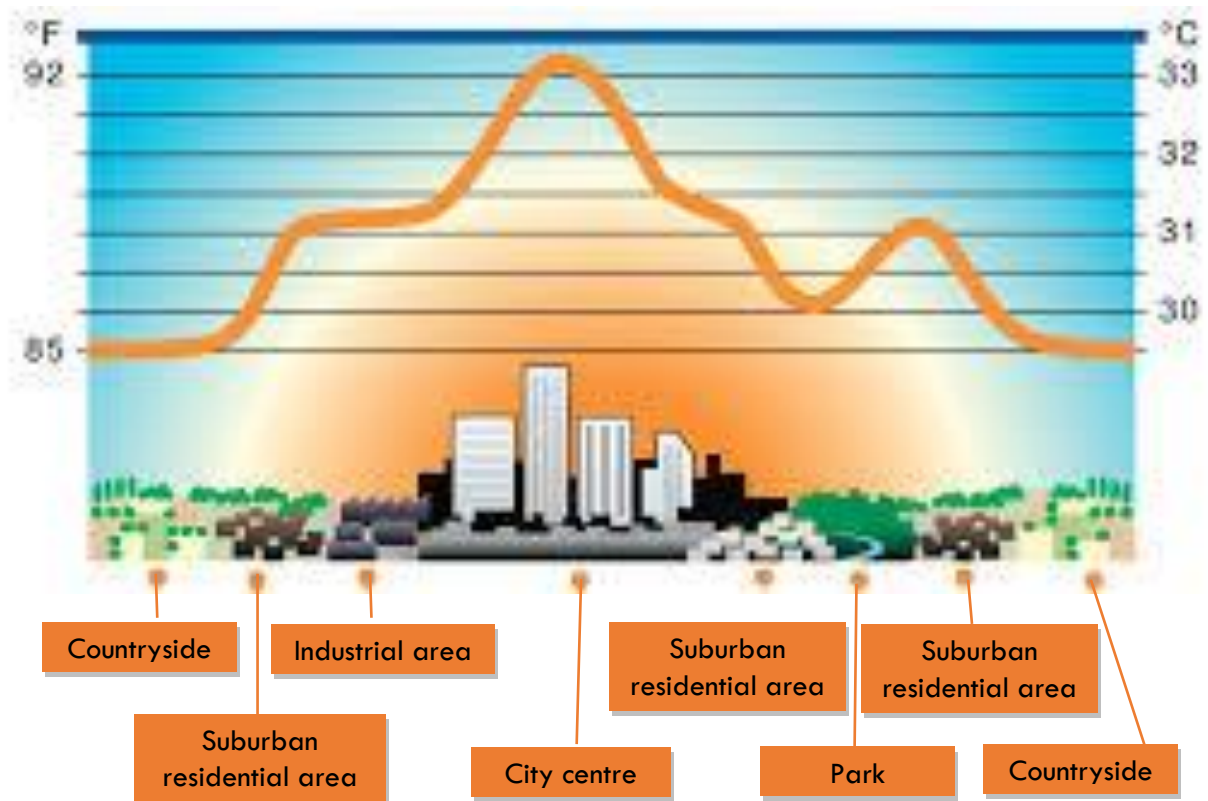
- "Regional" materials: The CO₂ emissions and energy consumption of the transport system make it one of the leading causes of environmental damage. Using materials sourced from within a limited radius curbs the negative effects caused by transportation.

- Materials with recycled content: Reusing materials that would otherwise have ended up in landfill not only reduces the amount of waste to dispose of, but also helps limit the consumption and erosion of virgin materials.

- Reduction of the heat island effect: This issue affects urban areas, which emit more heat than rural environments. The effect can be reduced by using roofs and paving solutions with a high solar reflectance index (SRI) value, meaning the materials absorb – and therefore emit – less heat.

Roofs that reduce this effect also help to bring down the energy consumption of air conditioning systems, as they take in air of a lower temperature.

Urban heat island



- Product life-cycle analysis: Sustainability is linked to having a low environmental impact, and considers not only raw materials but also the production process itself. A life-cycle analysis study was conducted for natural zintek® to make the impacts of the production process more transparent.
- Integrated design: Zintek S.r.l. offers more than just a product; it has developed a full technology, and increasingly assists with the design process, aiming for the best possible result, integrated with the surroundings and the building as a whole.
- Supply chain responsibility: Zintek S.r.l., aware of its role and responsibility, drew up and adopted an internal procedure for educating its entire supply chain, involving providing training to its suppliers and subcontractors. This allows it to respond effectively to the demands of the market (for example regarding the LEED® system).



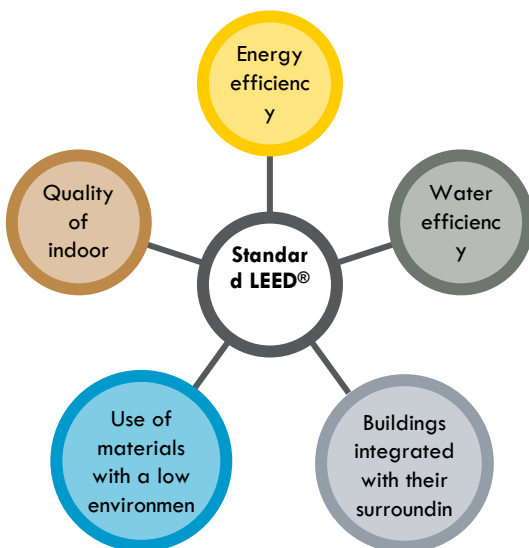
3. CONTRIBUTION TO THE LEED® SYSTEM

The LEED® sustainable building standards were first developed in the USA back in 1993 and are now applied in 40 different countries across the world. The system is based on credits, which are awarded for each of the aspects that make a building sustainable. The number of credits achieved defines the certification level: Certified, Silver, Gold or Platinum. The LEED® standards indicate the parameters required for building eco-friendly homes that are efficient in their energy and water use and well-integrated with their surroundings and services, use materials with a low environmental impact, and offer a high-quality internal environment. Essentially, it is a green building rating system designed to promote the development of sustainable buildings.

LEED® is flexible and wide-ranging, with different formulations for a range of construction areas: new builds and refurbishment (LEED® NC – New Construction and Major Renovations), building envelopes (LEED® Core & Shell – CS), schools (LEED® for Schools), existing buildings (LEED® EBOM – Existing Buildings Operation & Maintenance), small homes (GBC Home), and building interiors (LEED® CI – Commercial Interiors).

LEED® certification is awarded to the building, not the individual product, but every single product used in the building and their technical features play a key role in the final score awarded.

LEED® is based on six major areas, all with their own features (see diagram), requirements and prerequisites:



- The site's sustainability;
- Efficient use of drinking water;
- Energy efficiency;
- Use of recycled materials and sustainable resources;
- The interior environmental quality;
- The building's design excellence.

Each of these has both mandatory and optional criteria, which a building either must or can meet to attain the number of credits for the desired certification level.

This chapter illustrates the significant contribution zintek® cladding can make to achieving LEED® credits, and provides a description of its products in a global LEED® “language”.

The points apply to all the rating systems mentioned above (NC, CS, Schools, EB, Homes, Retail, CI) except where indicated otherwise. To keep things simple, the points given refer to the 2009 version of LEED® NC for Italy. The coloured boxes describe how the products contribute to version 4 of the LEED® NC system, which was released in November 2013 and replaced the previous system entirely from October 2016.

A summary table at the end of this document demonstrates how the credits contribute to the various types of protocol.

3.1 Zintek S.r.l. and the LEED® system

3.1.1 Contribution to LEED® system credits

SUSTAINABLE SITES

SS P1 – Construction activity pollution prevention

(obligatory requirement)

This prerequisite basically aims to ensure construction sites are managed sustainably by defining all the strategies that can result in a reduced impact on the surrounding environment.

Zintek S.r.l. supports building firms – which have responsibility for this prerequisite – in this stage by following the instructions provided and by urging its installers to comply with the site’s environmental management plan drawn up by the general contractor.

Zintek S.r.l. has therefore introduced a declaration to its process that clarifies the attention paid to this aspect both by Zintek S.r.l. and its installers, subcontractors and suppliers.

A copy of the document is provided below.



In LEED® VERSION 4 this prerequisite remains the same, but with an updated reference to the template to follow when drawing up the Site Management Plan.

Zintek S.r.l. has adopted an internal process that makes it easier to adapt its operations and those of its subcontractors to the specifications provided by the building company.

Porto Marghera (VE), __/__/____

RE: Construction activity pollution prevention, SS-P1 LEED® Italy New Construction and Major Renovations..

Products covered by declaration:

- zintek® roofs
- zintek® roofing system
- zintek® ventilated walls
- zintek® sheet metal work

Construction site covered by declaration: _____

With the aim of reducing the pollution generated by building operations, Mr. Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that he is aware of the contractual provisions regarding the creation of the ROOF/WALLS/SHEET METAL WORK AND CLADDING imposed by the CLIENT as set out in the “Erosion and Sedimentation Control Plan” and agrees to share these provisions with any subcontractors/suppliers.

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SS C 7.2 – Heat island effect: roof

(up to 1 point)

The heat island effect found in built environments has negative consequences not only for the surrounding environment, its microclimate and local flora and fauna, but also for the energy usage of the building itself.

This credit seeks to reduce this effect. One potential strategy is to install a roof with an SRI value of at least 29 if its slope is greater than 15%, or at least 78 if it is less than 15%.

Tests were carried out by the Department of Mechanical and Civil Engineering at the University of Modena and Reggio Emilia to check that zintek® products comply with this credit. The document below calculates the solar reflectance index (SRI) based on the criteria requested for the credit, and returns the SRI values measured. For the purposes of this requirement, the medium wind level was used, in line with the parameter given in the Lawrence Berkeley National Laboratory's Cool Roofing Material Database (<http://coolroofs.org/products> –reference provided in the credit text), which gave an initial SRI of 47, which is therefore above the threshold of 29 required for the credit.

The Zintek S.r.l. products that contribute to this credit are its **natural roofing products with a >15% slope.**

The declaration document Zintek S.r.l. has produced for this credit is provided below. Every declaration is accompanied by the laboratory test results.



This credit remains in LEED® VERSION 4, but the initial SRI value of the roofs has increased to 39.

zintek® natural roof coverings with a >15% slope also contribute to the following credit:

SS Credit: Heat Island Reduction.

Porto Marghera (VE), __/__/____

RE: Heat island effect: roof, SS-C7.2 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

- Natural zintek® roofs, slope >15%
- zintek® roofing system, slope >15%

Construction site covered by declaration: _____

With the aim of reducing heat islands, Mr. Gianni Schiavon, as legal representative of Zintek S.r.l., hereby declares that the SRI value of the natural zintek® roof with a medium wind level ($h_c = 12 \text{ W/m}^2\text{K}$), is 47*.

For roofs with a >15% slope, the following must therefore be true:

$$(A_{\text{SRI MIN}} / A_{\text{T}}) \times (47 / 29) \geq 75 \%$$

Where:

$A_{\text{SRI MIN}}$ = Roof area [m^2] that meets the minimum SRI value (78 for low-sloped roofs of $\leq 15\%$ and 29 for steep-sloped roofs of $>15\%$);

A_{T} = Total roof area [m^2];

For buildings with entirely >15% sloped roofs made of natural zintek®, $A_{\text{SRI MIN}} = A_{\text{T}}$, thus the following inequality $1 \times (47 / 29) \geq 75\%$ is always true.

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* The reference is the medium wind level value, in line with the parameter given in the Lawrence Berkeley National Laboratory's Cool Roofing Materials Database.

EELab Energy Efficiency Laboratory	Department of Mechanical and Civil Engineering University of Modena and Reggio Emilia	
Page 8/10	Client:	ZINTEK S.r.l.
27/01/2012	Sample name:	NATURAL ZINTEK

Table 3.2 Solar reflectance measured R ($T_a = 20^\circ\text{C}$).

Sample	Thickness [mm]	R ₁ [%] (measurement 1)	R ₂ [%] (measurement 2)	R ₃ [%] (measurement 3)	R ₄ [%] (measurement 4)	R [%] (average)
A	0.7	62.5	67.4	62.9	67.6	65
NB: The various measurements refer to different positions on the surface of the same sample						

Table 3.3 Thermal emissivity measured E ($T_a = 20^\circ\text{C}$).

Sample	Thickness [mm]	E ₁ [%] (measurement 1)	E ₂ [%] (measurement 2)	E ₃ [%] (measurement 3)	E [%] (average)
A	0.7	5	6	5	5
NB: The various measurements refer to different testing sessions on the surface of the same sample					

Table 3.4 Solar Reflectance Index (SRI).

Sample	SRI [%] for $h_c = 5 \text{ W}/(\text{m}^2\text{K})$ (low wind level)	SRI [%] for $h_c = 12 \text{ W}/(\text{m}^2\text{K})$ (medium wind level)	SRI [%] for $h_c = 30 \text{ W}/(\text{m}^2\text{K})$ (high wind level)
A	6	47	63

Table 3.5. Summary: solar reflectance, thermal emissivity and SRI

Sample	R [%] (solar reflectance)	E [%] (thermal emissivity)	SRI [%] $h_c = 5 \text{ W}/(\text{m}^2\text{K})$	SRI [%] $h_c = 12 \text{ W}/(\text{m}^2\text{K})$	SRI [%] $h_c = 30 \text{ W}/(\text{m}^2\text{K})$
A	65	5	6	47	63

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WATER EFFICIENCY

GA P1 – Irrigation water management

(obligatory requirement)

The LEED® system promotes and rewards saving drinking water, and therefore any strategies that reduce its consumption, including, of course, rainwater harvesting.

zintek® roofing systems and sheet metal work, along with relevant accessories, support the rainwater harvesting process, allowing the water to be used inside (e.g. for toilets) and/or outside the building (e.g. for irrigation). The LEED® system promotes and rewards saving drinking water, and therefore any strategies that reduce its consumption, including, of course, rainwater harvesting.

zintek® roofing systems and sheet metal work, along with relevant accessories, support the rainwater harvesting process, allowing the water to be used inside (e.g. for toilets) and/or outside the building (e.g. for irrigation).



When considering rainwater management and use, LEED® NC VERSION 4 recommends that design and construction teams describe their strategies for optimizing rainwater use and management, i.e. the use of systems and products that do not further contaminate the rainwater, so the harvested water can be easily reused.

The relevant credits for this aspect in version 4 are:

SS Rainwater Management

WE Prerequisite Outdoor Water Use Reduction

WE Credit Outdoor Water Use Reduction

Porto Marghera (VE), __/__/____

RE: Efficient irrigation water management, GA-C1 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

- zintek® roofs
- zintek® roofing system
- zintek® sheet metal work and general cladding

Construction site covered by declaration: _____

In order to limit or avoid the use of drinking water for irrigation purposes, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that the roofs/walls/sheet metal work and general cladding made of zintek® allow the channelling of rainwater for reuse, for example for irrigation.

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ENERGY AND ATMOSPHERE

EA C1 – Optimize energy performance

(1 to 19 points)

Energy efficiency and energy management are an essential feature of the LEED® system.

zintek® roof systems are designed to obtain the efficiency level required by each specific project, with the potential to achieve excellent energy efficiency performance.

The values given in the document below are average values, representative of the systems Zintek S.r.l. supplies most frequently. Naturally, where required, these values can be improved through a careful choice of components.



Clients with specific needs can contact the Zintek S.r.l. technical office, and we will work with them to design systems that achieve the desired performance levels. The declaration is accompanied by the technical data sheets for the products used on the site, containing the U-values for the specific roofing systems (see example below).



In LEED® NC VERSION 4, the energy efficiency calculation is structured to make it easier to monitor, with an updated version of the ASHRAE standard.

The potential performance of Zintek S.r.l.'s roofing systems means they can contribute to the following credits:

EA Credit Optimize Energy Performance

Porto Marghera (VE), __/__/____

RE: Optimize energy performance, EA-C1 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

- Roofing systems with zintek® finish

Construction site covered by declaration: _____

To improve buildings' energy performance and achieve levels above the minimum values set out in current standards and legislation, and in order to reduce the financial and environmental impacts associated with excess energy consumption, Mr. Gianni Schiavon, as legal representative of Zintek S.r.l., hereby declares that the company can supply roofing systems (including the insulation layer but excluding the load-bearing structure) with transmittance values (or U-values) ranging from 0.314 W/m²K to 0.150 W/m²K, and therefore below the legal maximum (both Italian Legislative Decree. 192/05 and ASHRAE Standard 90.1 – 2007). Zintek S.r.l. can provide a roofing system for each specific building site that achieves the specific values requested by the client.

The following types of insulation can be used for this purpose:

- Mineral fibre wool
 Glass wool
 Polystyrene (EPS, XPS)
 Wood fibre
 Polyurethane

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THERMAL AND HYGROMETRIC CHARACTERISTICS OF OPAQUE COMPONENTS

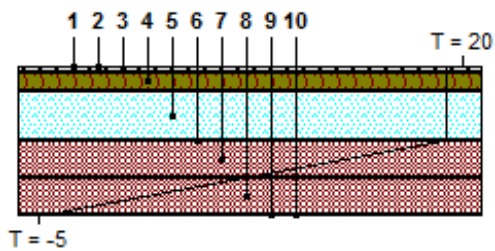
Structure Code: 1

Structure Description: Insulation and waterproofing system to install on the load-bearing roof structure. From the inside of the building outwards: 1) Vapour braking membrane; 2) High-density rock wool insulation with a double rigid panel (6 + 6 cm); 3) Breathable membrane; 4) Ventilation layer with 58 x 80 mm wooden battens at approx. 80 cm intervals; 5) Pine wooden board, 28 mm thick; 6) Acoustic insulation draining membrane for metal roofs; 7) zintek® roofing sheet metal. Total mass of roofing system: approx. 44 kg/m². U-value = 0.314 W/m²K

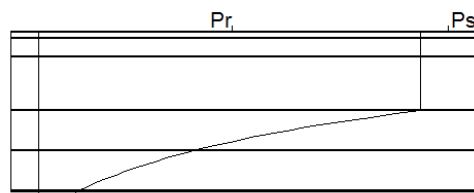
No.	LAYER DESCRIPTION (from top to bottom)	T [mm]	lambda [W/mK]	C [W/m ² K]	S.M. [kg/m ²]	P<50*10 ¹² [kg/msPa]	C [J/kgK]	R [m ² K/W]
1	Heating transfer (top)	0		7.700			0	0.130
2	zintek® rolled metal	1	110.000	111 000.000	7.10	0.000	380	0.000
3	Acoustic insulation draining membrane for metal roofs	9	105.000	11 666.667	1.92	7.148	1700	0.000
4	Pine	28	100.000	3 571.429	12.60	0.300	1700	0.000
5	Air ventilation layer + wooden battens	80	100.000	1 250.000	3.52	193.000	1008	0.001
6	Breathable membrane	1	0.231	355.385	0.22	5.216	1700	0.003
7	Rock wool panel	60	0.040	0.665	9.00	193.000	1	1.504
8	Rock wool panel	60	0.040	0.665	9.00	193.000	1	1.504
9	Vapour barrier	1	0.231	355.385	0.23	0.063	1700	0.003
10	Heating transfer (bottom)	0		25.000			0	0.040

RESISTANCE = 3.184 m²K/W	THERMAL MASS (top) = 26.039 kJ/m²K	TRANSMITTANCE = 0.314 W/m²K
THICKNESS = 240 mm	THERMAL MASS (bottom) = 1.670 kJ/m²K	SURFACE MASS = 44 kg/m²
PERIODIC THERMAL TRANSMITTANCE = 0.29 W/m²K	ATTENUATION FACTOR = 0.97	LAG = 0.99 h
T = Layer thickness; lambda = Thermal conductivity of the material; C = Unitary conductance; S.M. = Surface mass; P<50*10 ¹² = Vapour permeability with a relative humidity of up to 50%; C = Specific heat capacity; R = Thermal resistance of the individual layers; Resistance - Transmittance = Real resistance and transmittance values; Surface mass = Value calculated as set out in Annex A of Italian Legislative Decree 192/05 as amended.		

STRUCTURE DESIGN



PRESSURE DIAGRAM



Thickness: 240 mm

	Tt [°C]	Spt [Pa]	Rpt [Pa]	Ht [%]	Tb [°C]	Spb [Pa]	Rpb [Pa]	Hb [%]
PRESSURE DIAGRAMS	20.0	2 337	1 215	52.0	-5.0	401	208	51.8

Tt = Top temperature; Spt = Top saturated vapour pressure; Rpt = Top relative pressure; Ht = Top humidity; Tb = Bottom temperature; Spb = Bottom saturated vapour pressure; Rpb = Bottom relative pressure; Hb = Bottom humidity.

MATERIALS AND RESOURCES

MR C2 - Construction waste management

(1 or 2 points)

This credit assesses the waste material and packaging on the construction site for each product during the installation process and the extent to which they are “diverted” away from landfill and reintroduced into another production cycle.

The following information is required to check the material is actually recycled:

- Description of the material diverted away from landfill
- Recycling location
- Quantity of material recycled or diverted
- Total sum of waste generated
- Total sum of waste diverted
- Percentage of waste diverted

Although this information must be gathered and calculated by the building company, Zintek S.r.l. plays a key role upstream, as its products are supplied in recyclable packaging. Zintek S.r.l. can provide the client with the following specific information, required to achieve the MR C2 credit:

- Type of packaging material;
- Attached documentation declaring the weight of the various packaging materials used in the shipment;

The document prepared by the company to declare the packaging types and quantities used in the supplies is provided below.

This aspect is given even more importance in LEED® NC VERSION 4, where it is a prerequisite. Zintek S.r.l. has therefore adopted an internal process to minimize construction site waste and to provide packaging that is as recyclable as possible, making it easier to comply with the construction site waste management plan drawn up by the building company.

Zintek S.r.l.'s roofing systems can therefore contribute to the following credit:

MR Credit Construction and Demolition Waste Management

Porto Marghera (VE), ___/___/___

RE: Construction waste management MR-C2 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

- zintek® roofs
- zintek® roofing system
- zintek® ventilated walls
- zintek® sheet metal work

Construction site covered by declaration: _____

In order to prevent construction and demolition waste from being sent to landfill or being incinerated, and to reintroduce the recovered recyclable materials into the production process and

redirect reusable materials to dedicated collection sites, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that the company's site waste comprises:

ROOFS:

- 1 – Packaging for the material shipped to the site (zinc, timber, insulation, membranes) weighing a total of kg of which kg is recyclable;
- 2 – Fully recyclable untreated timber weighing a total of kg;
- 3 – Membranes weighing a total of kg of which kg is recyclable;
- 4 – Insulation weighing a total of kg of which kg is recyclable;
- 5 – Fully recyclable zinc sheet weighing a total of kg.

VENTILATED WALLS:

- 1 – Packaging for the material shipped to the site (zinc) weighing a total of kg, of which kg is recyclable;
- 2 – Fully recyclable zinc sheet weighing a total of kg.

SHEET METAL WORK:

- 1 – Packaging for the material shipped to the site (zinc) weighing a total of kg, of which kg is recyclable;
- 2 – Fully recyclable zinc sheet weighing a total of kg.

Zintek S.r.l. is happy to supply the specific values for each individual construction site.

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MR C3 – Materials reuse**(1 or 2 points)**

The LEED® system promotes all processes that involve reassessing pre-used materials or materials that are currently in use and redeveloping and reusing them in buildings.

Zintek S.r.l. can do this, obviously subject to the availability of the product to be reused. The declaration document prepared by the company for this aspect is provided below.

Porto Marghera (VE), __/__/__

RE: Materials reuse, MR-C3 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

zintek® roofs, zintek® ventilated walls, zintek® roofing system, zintek® sheet metal work.

In order to reuse building materials and products and so reduce demand for virgin materials and waste production, Mr. Gianni Schiavon, as legal representative of Zintek S.r.l., hereby declares that the company can also renovate pre-existing zinc roofs and/or walls, reusing the original material. The Zintek S.r.l. technical office is happy to conduct feasibility studies for this purpose for each individual project.

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MR C4 - Recycled content

(1 or 2 points)

This credit promotes the reuse of waste from manufacturing processes or materials that would end up in landfill at the end of their life cycle.

The titanium-zinc rolled metal contains a percentage of pre- and post-consumer recycled content, as shown in the following document, which has been prepared by the company to declare the amount of recycled content (as a percentage of the weight) in each specific shipment. The values given here are for guidance only, as the actual percentages are calculated based on the specific shipment.

Porto Marghera (VE), __/__/__

RE: Recycled content, MR-C4 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

- zintek® roofs
 zintek® roofing system

Construction site covered by declaration: _____

In order to increase demand for building materials and products with recycled content, and so reduce the impacts deriving from the extraction and processing of virgin materials, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that the company's zintek® products are made with the following recycled content by weight:

	% virgin material	% post-consumer recycled material	% pre-consumer recycled material
zintek® roofs			
zintek® roofing system			

The definitions of pre-consumer and post-consumer recycled materials follow the definitions set out in ISO 14021.

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MR C5 - Regional materials**(1 or 2 points)**

The relevant distances for the LEED® NC Italy protocol, measured in a straight line between the place of extraction, collection and processing and the place of installation (building) are:

- 350 km for road transportation
- 1050 km for transportation that includes railway or ship as a means of transport.

The contribution made by zintek® is linked conceptually to the location of the building site, and must be assessed on a case-by-case basis.

The LEED® US NC and LEED® CI protocols give a radius of 500 miles (800 km).

For the LEED® CI protocol, one may only consider the distance between the place of assembly and the construction site (without considering the origins of the materials brought into the production process).

The document prepared by the company to declare the distances from any building site requesting this credit, with all the relevant individual details, is shown below.

By sea, so also 1050 km.

A change to the original credit was made in LEED® BD+C V 2009: an option was added promoting the lower impact of transporting goods by ship or train. The total sum of the distance must be under 500 miles (800 km), with the distance travelled by train divided by three, the distance travelled by inland waterways divided by two, and the distance travelled by ship (sea) divided by 15.

Porto Marghera (VE), __/__/____

RE: Materials extracted, processed and produced nearby, MR-C5 LEED® Italy New Construction and Major Renovations.

Products covered by declaration: zintek® roofs, zintek® ventilated walls, roofing systems with zintek®, zintek® sheet metal work.

Construction site covered by declaration: _____

In order to increase the demand for building materials and products extracted and processed nearby, and so support the use of local resources and thus reduce environmental impacts derived from transportation, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that the company's zintek® products are:

1 - XX% extracted (if the origin of the raw materials is unknown, XX% = % sum declared as pre-consumer and post-consumer waste) within 350 km (800 km if LEED® USA) of the construction site (Porto Marghera for recycled content, raw materials unknown);

2 - XX% processed within 350 km (800 km if LEED® USA) of the construction site (Vicenza and Porto Marghera).

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MR C7 - Certified wood

(Up to 1 point)

Wood is a living material, which changes in colour and size over time. A hardwood trunk, with its trademark density and relatively small size, takes on average 15-20 years to grow. FSC certifies forests to safeguard their biological rhythm and ensure they are managed correctly.

At the client's request, we can ensure all wood supplied has FSC chain of custody certification.

Zintek S.r.l. has received FSC certification for its products, as shown at the following link:

<https://search.fsc.org/it/certificate/a024000000MasJ2AAJ/>

The document prepared by the company to declare the percentage of FSC Chain of Custody certified wood is provided below.

Porto Marghera (VE), __/__/____

RE: Certified wood, MR-C7 LEED® Italy New Construction and Major Renovations

Products covered by declaration:

zintek® roofing system

Construction site covered by declaration: _____

To encourage environmentally responsible forest management, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that Zintek, as a result of its FSC certification (<https://search.fsc.org/it/certificate/a024000000MasJ2AAJ/>) can supply FSC Chain of Custody certified wood-based materials. The chain of custody for the supplied products will be detailed in the invoices.

COC: _____

Certificate No. DNV – COC - 000877

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The MR category saw the most changes in its structure with the move to version 4.

The features of Zintek S.r.l.'s products that contribute to the aforementioned credits in version 3 also contribute to the following credit in version 4:

- MR Credit Building Product Disclosure and Optimization – Sourcing of Raw Materials: this credit contains the following features: recycled content, local material and certified wood.

In addition, LEED® v 4 introduces the topic of reducing contaminants within products, and specifically the following credits:

- MR credit PBT Source Reduction – MERCURY, which promotes mercury-free products;

Finally, it promotes products for which a life-cycle analysis (LCA) has been conducted, with a corresponding Environmental Product Declaration (EPD):

- MR Credit Building Product Disclosure and Optimization – Environmental Product Declaration. Zintek S.r.l. has conducted a product LCA. Please ask the technical office for further details.

INDOOR ENVIRONMENTAL QUALITY**EQ C4.4 - Low-emitting materials - Composite wood and agrifibre products****(up to 1 point)**

This credit requires that resins with added urea-formaldehyde are not used in wood composites. The focus is therefore on the glues used to stick the panels in the various levels together. It is possible to request that Zintek S.r.l. uses products that comply with the requirements for this credit in two different ways:

- using a non-composite wood;
- using panels with resins with no added urea-formaldehyde.

The company has prepared the following declaration on this specific point. This declaration will be accompanied by the technical data sheets for the products supplied.

Version 4 maintains and further develops the aspects linked to the health of the building's occupants. Composite woods without added resins containing urea-formaldehyde contribute to the following credit in LEED® NC v4:

EQ Credit Low-Emitting Materials

Porto Marghera (VE), ___/___/___

RE: Low-emitting materials - Composite wood and agrifibre products, QI-C4.4 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

zintek® roofing system

Construction site covered by declaration: _____

In order to reduce strong-smelling, irritating and/or toxic contaminants within buildings, for the comfort and wellbeing of both installers and occupants, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that the following composite wood and agrifibre products were not made with glues containing formaldehyde:

Wood fibre insulation, brand: _____

X-Lam beams, producer: _____

Plywood beams, producer: _____

MDF panels _____

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INNOVATION IN DESIGN**IP C 1 Innovation in design****(up to 1 point)**

ZINTEK S.r.l. has conducted an LCA study of its products, and can therefore contribute to obtaining points in this category in projects that promote the choice of materials with a low environmental impact.

The following declaration, prepared by the business for this specific credit, will be accompanied by the LCA study.

Porto Marghera (VE), ___/___/___

RE: Innovation in design, IP-C1 LEED® Italy New Construction and Major Renovations.

Products covered by declaration:

- Natural zintek® rolled metal
- Pre-weathered zintek® rolled metal

Construction site covered by declaration: _____

To enable design groups and projects to achieve excellent performance regarding the requirements for LEED, Mr Gianni Schiavon, as the legal representative of Zintek S.r.l., hereby declares that an LCA study has been conducted on the following product/system: zintek® rolled metal. This documentation is available on request.

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4. CONCLUSION AND SUMMARY

According to QualityNet, zintek® can contribute to achieving LEED® certification points for the credits listed in the following table:

CREDIT	Points	Title	zintek® product features (enter product names in this column)	PROTOCOLS	NOTES	zintek® roof	zintek® ventilated walls	zintek® roofing system	zintek® sheet metal work
SS P1	Obligatory	Sustainable sites	Procedure that satisfies the requirements set out in the general contractor's Management Plan, including subcontractors and suppliers	LEED NC ITALIA LEED BD&C GBC HOME LEED CI/RETAIL		X	X	X	X
SS c 7.2	1 point	Heat island effect: roof	SRI test showing compliance with the requirements for the credit	LEED NC ITALIA LEED BD&C GBC HOME		X (for natural roofs with a slope of >15%)		X (for natural roofs with a slope of >15%)	
GA P1	Obligatory	Water efficiency	zintek® roofing and sheet metal work products are naturally suited to rainwater harvesting	LEED NC ITALIA LEED BD&C GBC HOME		X		X	X
EA C1	1 to 19	Optimize energy performance	Energy efficiency parameters supplied in the roofing system's technical data sheets	LEED NC ITALIA LEED BD&C GBC HOME				X	

CREDIT	Points	Title	zintek® product features (enter product names in this column)	PROTOCOLS	NOTES	zintek® roof	zintek® ventilated walls	zintek® roofing system	zintek® sheet metal work
MR C2	1 or 2	Construction waste management	Recyclable packaging	LEED NC ITALIA LEED BD&C GBC HOME LEED CI/RETAIL		X	X	X	X
MR C3	1 or 2	Materials reuse	Recovery of zinc roofs, renovation and installation	LEED NC ITALIA LEED BD&C GBC HOME		X	X	X	X
MR C4	1 or 2	Recycled content	Declaration providing recycled content percentages	LEED NC ITALIA LEED BD&C GBC HOME LEED CI/RETAIL		X		X	
MR C5	1 or 2	Materials extracted, processed and produced at close distance	zintek® finished products are processed at the same site they are extruded	LEED NC ITALIA GBC HOME	350 km	X	X	X	X
MR C5	1 or 2	Materials extracted, processed and produced at close distance	zintek® finished products are processed at the same site they are extruded	LEED BD&C LEED CI/ RETAIL	800 km	X	X	X	X
MR C7	1 point	Certified wood	Zintek S.r.l. can purchase timber products with FSC chain of custody certification	LEED NC ITALIA LEED BD&C LEED CI/RETAIL GBC HOME	FSC			X	

CREDIT	Points	Title	zintek® product features (enter product names in this column)	PROTOCOLS	NOTES	zintek® roof	zintek® ventilated walls	zintek® roofing system	zintek® sheet metal work
QI C 4.4	1 point	Low-emitting materials - Composite wood and agrifibre products	Solid wood and/or composite wood without resins containing urea-formaldehyde can be used	LEED NC ITALIA LEED BD&C GBC HOME LEED CI/RETAIL				X	
IP C1	1 point	Innovation in design	LCA study of zintek® products	LEED NC ITALIA LEED BD&C GBC HOME LEED CI/RETAIL		X (rolled metal)			

For more information or more detail, please contact Zintek S.r.l.'s technical department.

Although Zintek S.r.l. believes that the product examined here can contribute to LEED® certification, it is worth remembering that the GBCI (Green Building Certification Institute) is the only organization in the world that can award points and issue LEED® certificates. In addition, LEED® certifies the building and not the materials. Zintek S.r.l. does not provide any guarantees that points will be awarded.