

elZinc® in LEED®
certification

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elZinc
Designing with elZinc®

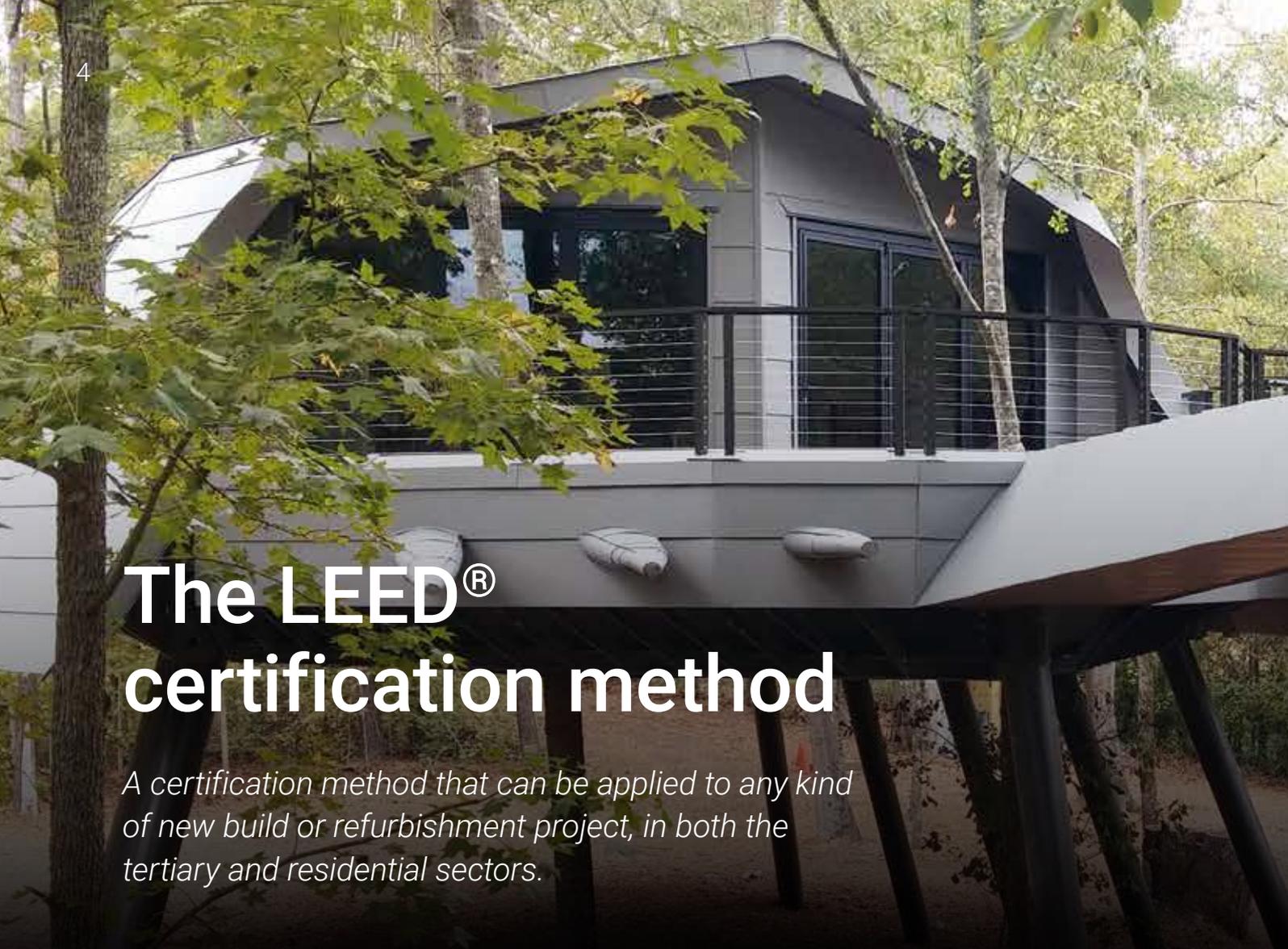
Sustainable building is a concept that nowadays forms an integral part of architecture. It is no longer just an advantage, but rather an imperative.

elZinc® in LEED® certification

Well aware since our beginnings of the need to protect the environment, at elZinc® we offer you this document which provides all the necessary information regarding zinc's advantages in Green Building.

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The LEED® certification method

A certification method that can be applied to any kind of new build or refurbishment project, in both the tertiary and residential sectors.

What is LEED® certification and where does it come from?

The LEED® certification program (Leadership in Energy and Environmental Design) was developed in 1998 by the U.S. Green Building Council (USGBC), in the United States.

It's an international certification system based on the assessment and approval of a series of factors related to Green Building and alternative energies.

These building sustainability measures also bear in mind the health and well-being of its occupants.

¿What LEED® credits is elZinc® applicable to?

The LEED® system is composed of a set of prerequisites and credits spread over 8 categories.

This document defines the contribution of elZinc® rolled zinc in LEED® v4 – 2014 credits. Thanks to its numerous advantages such as its complete recyclability or its longevity, titanium-zinc elZinc® can have an impact in up to 3 families of LEED® credits of your project and can contribute to gaining up to 7 points.

However, we must remind reader that LEED® does not certify specific products, but the building as a whole.



*Camps Southern Ground,
Fayetteville, GA, USA*

CATEGORY	CREDITS	ATTAINABLE POINTS
Sustainable sites	Reduction of heat islands SRI and SR.	2
Materials and resources	• Prerequisite*: Construction and demolition waste management planning.	*
	• Disclosure and optimization of the building's products - Environmental Product Declarations.	1
	• Disclosure and optimization of the building's products - Environmental Product Declarations. Sources of Raw materials.	1
Indoor environmental quality	Low emission materials	From 1 to 3

**Prerequisites are obligatory and therefore are not awarded points.*



What is LEED® rating?

Each building is classified by its use and aspires to one of the 4 certification levels, depending on the amount of points the project accrues or on the level of compliance achieved.

LEED® projects can achieve up to a maximum of 110 points and need a minimum of 40 points to obtain certification.

Certification levels:



CERTIFIED
40-49 points



SILVER
50-59 points



GOLD
60-79 points



PLATINUM
80-110 points



*Les quais de l'Erdre, Sucé-sur-Erdre,
France-Atelier Pellegrino*

What are the main advantages of a LEED® building?



Assurance that products used during the construction or the rehabilitation of the building contribute towards the quality of the environment.



Confirms that all efforts necessary have been made to reduce the building's environmental footprint before and after its conception.



Almost immediate and measurable impact on energy saving, reduction of greenhouse gas emissions, better indoor air quality and reduction of operating costs.



Optimizes the well-being and environmental security of the occupants of the building.

Sustainable sites

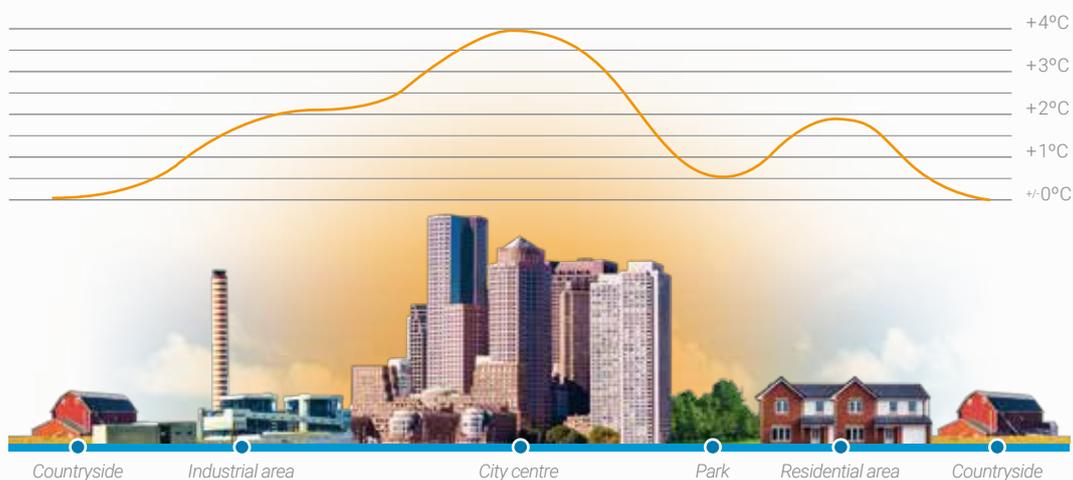
Heat island reduction SRI (Solar Reflectance Index) and SR (Solar Reflectivity) (2 points)

Intent:

To minimise the effects of heat islands on human and wildlife wellbeing. The term «Heat island» describes built-up areas with a higher average temperature when compared to the countryside that

surrounds them. The first consequence of this phenomenon is an increase in the building's energy consumption for cooling during summer.

Urban heat islands (typical temperature profile between urban and rural areas)



Requirements:

To comply with some of the following strategies defined in page 9:

• **Option 1: Non-roof and roof area (2 points, except Healthcare buildings: 1 point)**

<p><i>Meet the following criterion:</i></p>	$\frac{\text{Non-Roof Area}}{0,5} + \frac{\text{High reflectance Roof Area}}{0,75} + \frac{\text{Vegetated Roof Area}}{0,75} \geq \frac{\text{Total Site Paving Area}}{\text{Total Roof Area}}$
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Note:

Non-roof Area: Square meters (on plan) that incorporates any combination of strategies proposed by LEED® in its «Non-roof Measures».

High Reflectance Roof Area: Square meters (on plan) that incorporates any combination of the strategies proposed by LEED® in its «High Reflectance Roof Area Measures» meeting the indicated SRI depending on their pitch.

Vegetated Roof Area: Square meters (on plan) of vegetated roof.

Total Site Paving Area: Total square meters of paved areas, including all entrances, paved roads, sidewalks, paths, courtyards and parking within the building’s site.

Total Roof Area: Square meters of all roofs of all the buildings on the site, including access control huts and parking canopies. From this total number, we must subtract the sum of areas shaded by electromechanical equipment, solar panels and their attachments, and service areas, as well as skylight surfaces.

Measures to take:

«**Non-roof**» Areas: To provide shade with architectural and structural elements using material with an initial solar reflectance of at least 0.33 on installation.

«**High reflectance Roof**» Areas: Use roofing materials that have an SRI equal to or greater than the values in the following Table. Meet the three-year aged SRI value. If three-year aged value information is not available, use materials that meet the initial SRI value.

	STEEPLY PITCHED ROOF
Roof pitch	2:12 / 9,5° / 16,7%
Initial SRI	39
3 year aged SRI	32

Table1 - Solar reflectance values according to roof pitch.

• **Option 2: «Parking under cover» (1 point)**

Place a minimum of 75% of parking spaces under cover. Any roof employed to shade or cover parking must have a three-year aged SRI of at least 32. Should the three-year aged value information be

unavailable; use materials with an initial SRI of at least 39 on installation

Our Contribution:

«**Non-roof**» Areas: elZinc® Natural as well as elZinc Rainbow® gold are two materials that exceed the initial solar reflectance value of 0.33, helping to pass the criterion.

«**High Reflectance Roof**» Area and «parking under cover»: elZinc® Natural as well as elZinc Rainbow® gold are both materials that exceed the solar reflectance index value of 39.



elZinc® Natural



elZinc Rainbow® gold

 **Available Documentation:**

elZinc® has independent laboratory test results available regarding the solar reflectance index of elZinc® Natural, elZinc Slate®, elZinc Rainbow® gold, elZinc Rainbow® red and elZinc Rainbow® blue.

Materials and resources

Prerequisite: Construction and demolition waste management planning

Intent:

To reduce the waste produced during a building's construction and demolition and disposed of in landfills or by incineration by the recovery, reuse and recycling of materials.

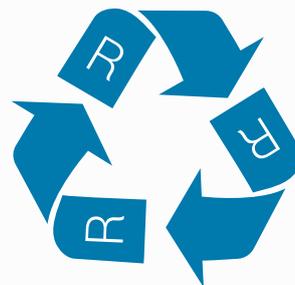
Requirements:

To develop and implant a construction and demolition waste management plan, establishing diversion goals for the building's waste (identifying at least 5 structural and non-structural materials) and describing the streams that the principal waste will follow.



Our Contribution:

The intrinsic characteristics of zinc are themselves a helping hand in establishing strategies based on the three R's (Reduce, Reuse and Recycle), this makes it easy to meet the goals set out in the construction and demolition waste management plan



Strategies to reduce waste generation and advantages of rolled zinc:



Available documentation:

Flow diagram of zinc as a waste product.

DESIGN, PLANNING AND CONSTRUCTION OF THE BUILDING	
STRATEGIES suggested by eZinc®	ZINC'S CONTRIBUTION
Earmarking of reusable and/or recyclable materials that can be recovered as by-products or are recyclable for their high value as scrap.	A material able to be 100% recycled and reused a practically indefinite number of times, without losing any of its chemical or mechanical properties, nor any of its initial quality.
Use of material optimization techniques based on the available dimensions, to reduce off-cuts.	Zinc used in construction is supplied according to the correct dimensions for its installation on site and therefore will not generate any waste from off-cuts.
Use of low density materials that reduce the weight of waste generated at the end of its useful life.	Although zinc's density is 7,2kg/dm ³ , it is installed in sheets of a very thin gauge that minimize the installed weight per m ² on the building – typical values range between 5,6 to 10 kg/m ² . These values are lower than other metals such as copper and lead used in metal cladding. Being 100% recyclable (and almost 100% is recycled) the amount of waste produced at the end of its useful life is insignificant.

SERVICE LIFE AND DEMOLITION	
STRATEGIES suggested by eZinc®	ZINC'S CONTRIBUTION
Have sites available for the correct segregation of waste materials produced during the maintenance and demolition of the building.	During renovation or demolition, the zinc is recovered. Given its economic value and its recyclability, it is removed from site safely and quickly to be sold as scrap and recycled.
Treatment of produced waste by an authorised agent, allowing for the recovery of materials susceptible to treatment as by-products, as well as all other recoverable fractions.	Zinc can be recycled without losing any of its properties, meaning that zinc waste can be considered as a raw material source.

Disclosure and optimization of the building's products—Environmental Product Declaration (1 point)

Intent:

To foster the use of products and materials for which life-cycle information is available and that have preferable environmental, economic and social impact profiles.

Requisites:

The selection of products from manufacturers who have verified improved environmental life-cycle impacts. To achieve this point, the use of at least 20 different permanently installed products sourced from at least five different manufacturers that meet some of the criteria/credits is required.



Our Contribution:

In collaboration with the renowned German Sustainable Building Council (DGNB)*, elZinc® has obtained Environmental Product Declarations «EPDs» for elZinc® Natural and elZinc Slate®. They consist of life-cycle assessments carried out according to ISO14040/44 and EN15804 on the manufacture of the products and have a cradle to

grave scope. Verification of said declarations has been performed by an independent third party, according to ISO 14025.



Institut Bauen und Umwelt e.V.

elZinc® Environmental footprint

	1 Kg elZinc® Natural	1 Kg elZinc Slate®
GWP	3,5	3,5
ODP	3,3 x 10 ⁻⁷	3,3 x 10 ⁻⁷
AP	2,3 x 10 ⁻²	2,3 x 10 ⁻²

Available Documentation

Environmental Product Declaration elZinc® Natural.

Environmental Product Declaration elZinc Slate®

Disclosure and optimization of the buildings products—Environmental Product Declaration—Raw material sources (1 point)

Intent

To foster the use of products and materials for which life-cycle information is available and that have preferable environmental, economic and social impact profiles. To reward project teams for choosing products verified to have been extracted or sourced responsibly.

Requisites:

The selection of products from manufacturers who have verified improved environmental life-cycle impacts.

To obtain this point, use at least 20 different permanently installed products from at least five different manufacturers that have publicly released a report from their raw material suppliers explaining the details of their responsible extraction policy. In this case, we must emphasise that titanium-zinc eZinc® counts as ½ a product.



Our Contribution:

All eZinc® products are produced with zinc (N° CAS 7440-66-6) with a purity greater than 99,995%.

Zinc used in manufacturing of eZinc® rolled products doesn't contain traces of substances known as «conflict minerals» originating from certain countries (See "Dodd-Frank" law, USA)

Available documentation:

Sustainability report from our raw material provider.

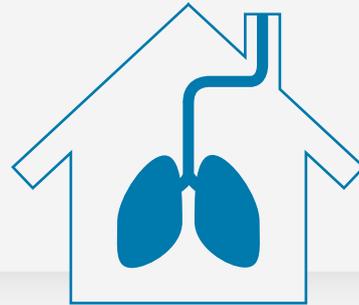
Certificate of 'no conflict' mineral content.

Indoor environmental quality

■ Low emitting materials (From 1 to 3 points)

Intent:

To reduce the concentration of chemical compounds that could harm the quality of the air, human health, productivity and the environment through the selection of materials with low or no toxic substance emission for their projects.



Requisites:

To obtain this credit, the different materials used for the interior and exterior of the building have to meet different requirements according to the 7 material categories LEED® establishes.

Each category has different threshold levels of compliance.

The concentration of volatile organic compound (VOC) emissions to the indoor air, as well as the VOC content in the materials themselves is the criteria upon which the credit is assessed.

In the case of products applied on the exterior (as rolled zinc usually is), this assessment is only performed on healthcare and education buildings.

Our contribution:

elZinc® materials are an excellent choice for achieving this requisite, since rolled elZinc® Natural is a bright rolled metal, which according to LEED® specifications is part of the «Inherently non-emitting sources» group. This means that this material is considered wholly compliant with the requisites demanded by LEED® in terms of VOC emissions without the need of testing.

Thanks to the patina that zinc produces naturally and protects it against corrosion, no additives are necessary to better its resistance against

atmospheric weathering effects. This way, the material doesn't contain any environmentally harmful elements.

Volatile organic compound content even in those elZinc® products that use a superficial coating which provides different tonalities, is practically unappreciable.



Available documentation:

elZinc® volatile compounds content report

Designing buildings to minimise their environmental impact is not only good for the environment, but also good for the people who work and live in them. Therefore, in eZinc® we develop high quality, aesthetically pleasing products that fulfil the requirements of Sustainable Building.



Residence, Bondi, Australia



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This document provides information regarding the credits in which elZinc® could contribute to in the process of a LEED® certification system. The final score is submitted to LEED® for assessment. Certification is administered by the Green Building Certification Institute (GBCI) through a network of independent and professional certifying bodies.