Technical Notebook

# Standard LEED® Products Mapping

Mapping report of Stiferite's products in comparison to the standard LEED®

In care of the:
**Research and Development Division**
**STIFERITE Srl**

habitech
LEADER IN LEED®

november 2011

stiferite®
thermal insulation

For detailed information on the complete line of Stiferite's products including technical and performance characteristics, please consult all the gathered documentation and technical data sheets of each product available on our website:

**www.stiferite.com**

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## Company

Stiferite is in the production sector of thermal insulation.
The name Stiferite in Italy is synonymous with thermal insulation panels in expanded rigid polyurethane foam. An identification process that dates back to the 60's when the company of Ferdinando Stimamiglio was the first in Europe to start a continuous production line of panels in rigid polyurethane with various facers, named STIFERITE.

The production plant in Padova, (Italy) has two continuous production lines, capable of producing more than 9 million square meters a year of insulation panels in polyurethane foam.
The production systems are manned and electronically controlled to insure and maintain high quality standards.

## Products

Stiferite's thermal insulation panels are made of Polyiso (PIR) foam. This particular type of polyurethane foam was introduced in Stiferite's production beginning in the year 2000. PIR represents an important evolution in that it allows to obtain significant improvements in performance of mechanical, reaction to fire and dimensional stability.

The various types of Stiferite's panels of different formats, facers and performances have been chosen to best meet the needs of thermal insulation of roofs, walls, floors and industrial applications.

## Purpose of the mappping document

The LEED® rating systems are designed for rating new and existing commercial, institutional and residential buildings. It takes into consideration the energy efficiency of Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources and Indoor Environmental Quality.

The purpose of the present document relates to the conformity of the products to the standard and/or contributions that it may bring to the same project.

## Introduction

The LEED® certification is related to the building, and not the product, despite the fact that it plays an essential role in obtaining a final credit. All the analyzed products within the project can contribute in obtaining of the credit, as long as they are in conformity of the requirements.
Participants to the LEED® project will form a partnership with suppliers able to offer products in conformity of the required parameters, and also communicate all the information, documentation and claims that certify the product's performance.

## LEED® - Leadership in Energy and Environmental Design

The certification of buildings LEED® was formed in the United States in 1993 by the U.S. Green Building Council, a non-profit organization that has contributed deeply in the innovation of the building industry. The organization quickly found spreading interest: it already reached 15,700 members worldwide by September of 2009, and as of today, the LEED® certification is used in more than 40 countries.
The LEED® system certifies the sustainability of the environment and the building's economy. It considers all the phases of construction: design, construction site, daily management, materials used and the energy performance.
LEED® sets specific measurable requirements, from the consumption of environmental resources and energy, to the internal environment quality, for which defines the level of eco-comparability of buildings.
In addition to the certification of buildings, the LEED® system nourishes a real source of knowledge with the objective of a renewed culture in building construction, and the orientation of communities toward eco-sustainable building construction.
LEED® works on a "rating system" based on the type of operation being considered.
This document was prepared in the Italian version: LEED® New Construction and Renovations, released on April 14th, 2010, and the U. S. version: LEED® for New Construction and Major Renovation. The Italian Standard was translated from the American and the norms of reference were transposed and applied to the Italian and European situations.
LEED® New Construction and Renovations and LEED for New Construction and Major Renovation **are applicable to commercial and office buildings, institutions (libraries, museums, churches, etc.), and residential buildings of at least 4 floors above ground.**

## Prerequisites and credits in the LEED® 2009 New Construction and Renovation

The LEED® building certificate is based on a credit structure that includes seven topics:
1. Sustainable Sites (SS)
2. Water Efficiency (WE)
3. Energy and Atmosphere (EA)
4. Materials and Resources (MR)
5. Indoor Environmental Quality (IEQ)
6. Innovation & Design (ID)
7. Regional Priority (RP)

The credits are structured in: prerequisite (p), central credits (c) and credits for innovation.
During the certification phase a project must satisfy all the required prerequisites, the credits are awarded based on the level of achievement reached of each requisite being considered, and evaluated based on the established criteria.
The points earned from each topic are then added to determines the level of certification awarded:
- Certified (40 – 49 points)
- Silver (50 – 59 points)
- Gold (60 – 79 points)
- Platinum (80 points or more).

The credit structure and each single identification is summarized in table 1.

*There are other USA LEED standards on the following topics*
*- EB, Existing Buildings);*
*- CI, Commercial Interiors;*
*- LEED® for Homes.*

| TABLE 1 – CHECK LIST LEED® New Construction and Renovations | | | |
|---|---|---|---|
| | SS | Sustainable Sities | 26 Points |
| C | Prerequisite 1 | Construction Activity Pollution Prevention<br>To reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation. | Required |
| D | Credit 1 | Site Selection<br>To avoid the development of inappropriate sites and reduce the environmental impact from the location of a building on a site. | 1 |
| D | Credit 2 | Development Density and Community Connectivity<br>To channel development to urban areas with existing infrastructure, protect greenfields, and preserve habitat and natural resources. | 5 |
| D | Credit 3 | Brownfield Redevelopment<br>To rehabilitate damaged sites where development is complicated by environmental contamination and to reduce pressure on undeveloped land. | 1 |
| D | Credit 4.1 | Alternative Transportation - Public Transportation Access<br>Ridurre l'inquinamento e l'impatto ambientale generati dal traffico automobilistico. | 6 |
| D | Credit 4.2 | Alternative Transportation - Bicycle Storage and Changing Rooms<br>To reduce pollution and land development impacts from automobile use. | 1 |
| D | Credit 4.3 | Alternative Transportation - Low-Emitting and Fuel-Efficient Vehicles<br>To reduce pollution and land development impacts from automobile use. | 3 |
| D | Credit 4.4 | Alternative Transportation - Parking Capacity<br>To reduce pollution and land development impacts from automobile use. | 2 |
| C | Credit 5.1 | Site Development - Protect or Restore Habitat<br>To conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity. | 1 |
| D | Credit 5.2 | Site Development - Maximize Open<br>To promote biodiversity by providing a high ratio of open space to development footprint. | 1 |
| D | Credit 6.1 | Stormwater Design - Quantity Control<br>To limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff and eliminating contaminants. | 1 |
| D | Credit 6.2 | Stormwater Design - Quality Control<br>To limit disruption and pollution of natural water flows by managing stormwater runoff. | 1 |
| C | Credit 7.1 | Heat Island Effect - Nonroof<br>To reduce heat islands1 to minimize impacts on microclimates and human and wildlife habitats. | 1 |
| D | Credit 7.2 | Heat Island Effect - Roof<br>To reduce heat islands1 to minimize impacts on microclimates and human and wildlife habitats. | 1 |
| D | Credit 8 | Light Pollution Reduction<br>To minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments. | 1 |
| | WE | Water Efficiency | 10 Points |
| D | Prerequisite 1 | Water Use Reduction<br>To increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. | Required |
| D | Credit 1 | Water Efficient Landscaping<br>To limit or eliminate the use of potable water or other natural surface or subsurface water resources available on or near the project site for landscape irrigation. | 2 - 4 points |
| D | Credit 2 | Innovative Wastewater Technologies<br>To reduce wastewater generation and potable water demand while increasing the local aquifer recharge | 2 |
| D | Credit 3 | Water Use Reduction<br>To further increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. | 2 4 points |
| | EA | Energy and Atmosphere | 35 Points |
| C | Prerequisite 1 | Fundamental Commissioning of Building Energy Systems<br>To verify that the project's energy-related systems are installed, and calibrated to perform according to the owner's project requirements, basis of design and construction documents.<br>Benefits of commissioning include reduced energy use, lower operating costs, fewer contractor callbacks, better building documentation, improved occupant productivity and verification that the systems perform in accordance with the owner's project requirements. | Required |
| D | Prerequisite 2 | Minimum Energy Performance<br>To establish the minimum level of energy efficiency for the proposed building and systems to reduce environmental and economic impacts associated with excessive energy use. | Required |
| D | Prerequisite 3 | Fundamental Refrigerant Management<br>To reduce stratospheric ozone depletion. | Required |
| D | Credit 1 | Optimize Energy Performance<br>To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use. | 1 - 19 points |
| LEGEND: D = Design, C = Construction | | | |

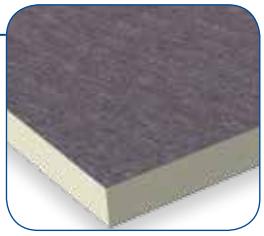
| continue) TABLE 1 – CHECK LIST LEED® New Construction and Renovations | | | |
|---|---|---|---|
| D | Credit 2 | On-site Renewable Energy<br>To encourage and recognize increasing levels of on-site renewable energy self-supply to reduce environmental and economic impacts associated with fossil fuel energy use. | 1 - 7 points |
| D | Credit 3 | Enhanced Commissioning<br>To begin the commissioning process early in the design process and execute additional activities after systems performance verification is completed. | 2 |
| D | Credit 4 | Enhanced Refrigerant Management<br>To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to climate change. | 2 |
| C | Credit 5 | Measurement and Verification<br>To provide for the ongoing accountability of building energy consumption over time. | 3 |
| C | Credit 6 | Green Power<br>To encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis. | 2 |
| | | | |
| | MR | Materials and Resources | 14 Points |
| D | Prerequisite 1 | Storage and Collection of Recyclables<br>To facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills. | Required |
| C | Credit 1.1 | Building Reuse - Maintain Existing Walls, Floors and Roof<br>To extend the lifecycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport. | 1 - 3 points |
| C | Credit 1.2 | Building Reuse—Maintain Interior Nonstructural Elements<br>To extend the lifecycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport. | 1 |
| C | Credit 2 | Construction Waste Management<br>To divert construction and demolition debris from disposal in landfills and incineration facilities. Redirect recyclable recovered resources back to the manufacturing process and reusable materials to appropriate sites. | 1 - 2 points |
| C | Credit 3 | Materials Reuse<br>To reuse building materials and products to reduce demand for virgin materials and reduce waste, thereby lessening impacts associated with the extraction and processing of virgin resources. | 1 - 2 points |
| C | Credit 4 | Recycled Content<br>To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials. | 1 - 2 points |
| C | Credit 5 | Regional Materials<br>To increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation. | 1 - 2 points |
| C | Credit 6 | Rapidly Renewable Materials<br>To reduce the use and depletion of finite raw materials and long-cycle renewable materials by replacing them with rapidly renewable materials. | 1 |
| C | Credit 7 | Certified Wood<br>To encourage environmentally responsible forest management. | 1 |
| | | | |
| | IEQ | Indoor Environmental Quality | 15 Points |
| D | Prerequisite 1 | Minimum Indoor Air Quality Perform<br>To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants. | Required |
| D | Prerequisite 2 | Environmental Tobacco Smoke (ET S) Control<br>To prevent or minimize exposure of building occupants, indoor surfaces and ventilation air distribution systems to environmental tobacco smoke (ETS). | Required |
| D | Credit 1 | Outdoor Air Delivery Monitoring<br>To provide capacity for ventilation system monitoring to help promote occupant comfort and well-being. | 1 |
| D | Credit 2 | Increased Ventilation<br>To provide additional outdoor air ventilation to improve indoor air quality (IAQ) and promote occupant comfort, well-being and productivity. | 1 |
| C | Credit 3.1 | Construction Indoor Air Quality Management Plan - During Construction<br>To reduce indoor air quality (IAQ) problems resulting from construction or renovation and promote the comfort and well-being of construction workers and building occupants. | 1 |
| C | Credit 3.2 | Construction Indoor Air Quality Management Plan - Before Occupancy<br>To reduce indoor air quality (IAQ) problems resulting from construction or renovation to promote the comfort and well-being of construction workers and building occupants. | 1 |
| C | Credit 4.1 | Low-Emitting Materials - Adhesives and Sealan<br>To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. | 1 |
| C | Credito 4.2 | Low-Emitting Materials - Paints and Coatings<br>To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. | 1 |

LEGEND: D = Design, C = Construction

| continue) TABLE 1 – CHECK LIST LEED® New Construction and Renovations | | | |
|---|---|---|---|
| C | Credit 4.3 | Low-Emitting Materials - Flooring Systems<br>To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. | 1 |
| C | Credit 4.4 | Low-Emitting Materials - Composite Wood and Agrifiber Products<br>To reduce the quantity of indoor air contaminants that are odorous, irritating and/or harmful to the comfort and well-being of installers and occupants. | 1 |
| D | Credit 5 | Indoor Chemical and Pollutant Source Control<br>To minimize building occupant exposure to potentially hazardous particulates and chemical pollutants. | 1 |
| D | Credit 6.1 | Controllability of Systems - Lighting<br>To provide a high level of lighting system control by individual occupants or groups in multi-occupant spaces (e.g., classrooms and conference areas) and promote their productivity, comfort and well-being. | 1 |
| D | Credit 6.2 | Controllability of Systems - Thermal Comfort<br>To provide a high level of thermal comfort system control1 by individual occupants or groups in multi-occupant spaces (e.g., classrooms or conference areas) and promote their productivity, comfort and well-being. | 1 |
| D | Credit 7.1 | Thermal Comfort - Design<br>To provide a comfortable thermal environment that promotes occupant productivity and well-being. | 1 |
| D | Credit 7.2 | Thermal Comfort - Verification<br>To provide for the assessment of building occupant thermal comfort over time. | 1 |
| D | Credit 8.1 | Daylight and Views - Daylight<br>To provide building occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. | 1 |
| D | Credit 8.2 | Daylight and Views - Views<br>To provide building occupants a connection to the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. | 1 |
| | | | |
| | ID | Innovation in Design | 6 Points |
| D | Credit 1 | Innovation in Design<br>To provide design teams and projects the opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.. | 1 - 5 points |
| C | Credit 2 | LEED Accredited Professional<br>To support and encourage the design integration required by LEED to streamline the application and certification process. | 1 |
| | | | |
| | RP | Regional Priority | 4 Points |
| | Credit 1 | Regional Priority<br>To provide an incentive for the achievement of credits that address geographically-specific environmental priorities. | Da 1 a 4 |
| | | | |
| | Total Points | | 110 Points |

# List and description of STIFERITE'S analyzed products

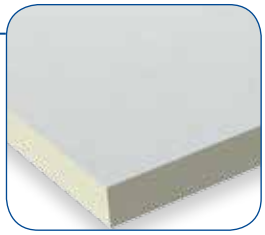
## STIFERITE's Class B - STIFERITE's Class BH



Insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered by a bituminous fibre glass bonded to PP facer on the top side and a mineral fibre facer on the bottom. Ideal in "hot" roof applications, where waterproofing mantles are soldered directly to the insulation panel by the use of a flame torch.
The variant STIFERITE'S Class BH panel offers better mechanical resistance performance; it is therefore ideal for use under heavy loads.

***Main applications:***
Roof insulation under waterproofing bituminous mantles in view, where high resistance to a flame torch during installation is required.

## STIFERITE's Class S - STIFERITE's Class SH



Insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by saturated fibre glass facers.
The variant SH panel offers better mechanical resistance performance; it is therefore ideal for use under heavy loads.

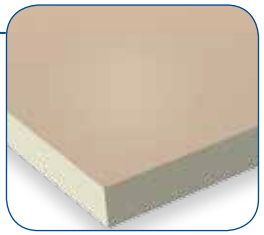
***Main applications:***
Insulation of roofs under synthetic mantles in view
Insulation of floors
Insulation of decks
Insulation of walls

## STIFERITE's Class SK


Insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by saturated fibre glass facers.

***Main applications:***
Outside building wall insulation related to ETICSystems and ventilated systems.

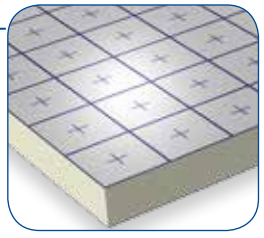
## STIFERITE's GT



Insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by Duotwin® facers.

***Main applications:***
Insulation of roofs
Insulation of floors
Insulation of walls

## STIFERITE's GTE



Insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by gas impermeable multilayer aluminium foil facer.

***Main applications:***
Insulation of roofs with vapour requirements
Insulation of floors with vapour requirements
Insulation of walls with vapour requirements.

**Note: Technical data sheets and other documentation is available from the website: www.stiferite.com**

## List and description of STIFERITE'S analyzed products

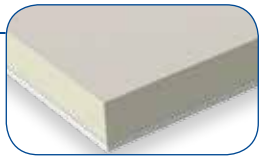
### STIFERITE's ISOVENTILATO

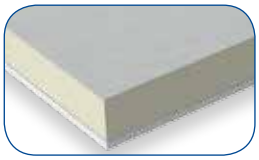
Insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on the bottom side by a saturated mineral fibre facer, and the top side by a laminglass facer. This type of facer guarantees the permeability of vapour and the impermeable of water (measured at 3 meter or more of water). Laths are incorporated inside the foam under the top facer along the entire length of the panel to allow for easy installation.

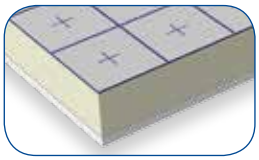
***Main applications:***

Insulation of pitched roofs with: full ventilation, micro-ventilation, under sheet metal or corrugated metal.

### STIFERITE's RP1 - RP2 - RP3







STIFERITE'S RP1 is made-up of STIFERITE'S GT panel of rigid PIR foam covered on both sides by Duotwin facers and bonded on only one side, to a 9,5mm thick sheet of plaster board.

STIFERITE'S RP2 is made-up of STIFERITE'S CLASS S panel of rigid PIR foam covered on both sides by saturated fibre glass facers, and bonded on only one side to a 9,5mm thick sheet of plaster board.

STIFERITE'S RP3 is made-up of STIFERITE'S GTE panel of rigid PIR foam covered on both sides by a Polytwin® facer, and bonded on only one side to a 9,5mm thick sheet of plaster board.

***Main applications:***

Insulation of internal partitions or ceilings.

### STIFERITE's AI4 - AI6 - AI8

STIFERITE'S AI4 is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by 40 µm of embossed aluminium facers.

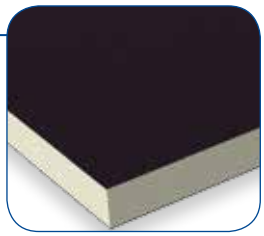
STIFERITE'S AI6 is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by 60 µm of embossed aluminium facers.

STIFERITE'S AI8 is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by 80 µm of embossed aluminium facers.

***Main applications:***

IInsulation of heated floors
Insulation of walls with vapour barrier
Insulation of ventilated walls
Industrial insulation.

### STIFERITE's BB



STIFERITE'S BB is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by bituminous carton felt facers. Ideal for flame torch applications.

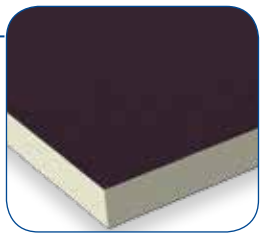
***Main applications:***

Insulation of ballasted or paved roofs
Insulation of floors.

**Note: Technical data sheets and other documentation is available from the website: www.stiferite.com**

# List and description of STIFERITE'S analyzed products

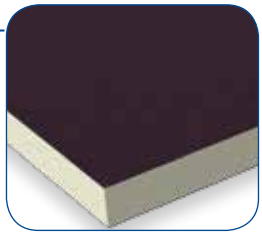
## STIFERITE's IP



STIFERITE'S IP is an insulation panel made of closed cells rigid Polyurethane foam, expanded without the use of CFC or HCFC, covered on both sides by mono-bituminous paper.
NOT to be used in flame torch applications.

***Main applications:***
Industrial insulation.

## STIFERITE's P3



STIFERITE'S IP is an insulation panel made of closed cells rigid Polyurethane foam, expanded without the use of CFC or HCFC, covered on both sides by mono-bituminous paper.
NOT to be used in flame torch applications.

***Main applications:***
Industrial insulation.

## STIFERITE's AV4 - AV6 - AV8

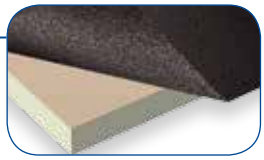
STIFERITE'S AV4 is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on one side by 40 µm embossed aluminium and saturated fibre glass on the other.

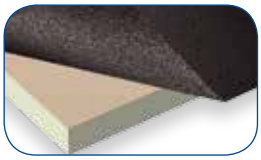
STIFERITE'S AV6 is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on one side by 60 µm embossed aluminium and saturated fibre glass on the other.

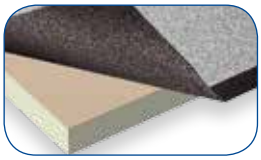
STIFERITE'S AV8 is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on one side by 80 µm embossed aluminium and saturated fibre glass on the other

***Main applications:***
Insulation of heated floors
Insulation of ventilated walls
Insulation in cavities where a vapour barrier is required.

## STIFERITE's GT3 - GT4 - GT5







STIFERITE'S GT3 is made-up of STIFERITE'S GT panel of rigid PIR foam covered on both sides by Duotwin® facers and bonded on one side to a water-proofing bituminous polymer of 3Kg/m$^2$ armed in fibre glass.

STIFERITE'S GT4 is made-up of STIFERITE'S GT panel of rigid PIR foam covered on both sides by Duotwin® facers and bonded on one side to a waterproofing bituminous polymer of 4 mm armed in fabric/no fabric of polyester.

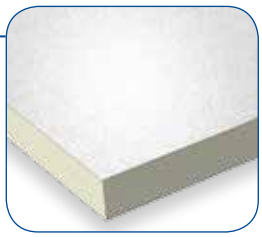
STIFERITE'S GT5 is made-up of STIFERITE'S GT panel of rigid PIR foam covered on both sides by Duotwin® facers and bonded on one side to a water-proofing bituminous polymer of 4,5Kg/m$^2$ armed in fabric/no fabric of polyester with a slate chips finish.

***Main applications:***
Insulation and waterproofing support of flat and pitched roofs.

**Note: Technical data sheets and other documentation is available from the website: www.stiferite.com**

## List and description of STIFERITE'S analyzed products

### STIFERITE ISOCANALE ALC - ALL - ALE



ISOCANALE ALC is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on both sides by 80 µm of embossed aluminium facers.

ISOCANALE ALL is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on the external side by an 80 µm embossed aluminium facer and on the internal side by an 80 µm smooth aluminium facer.

ISOCANALE ALE is an insulation panel made of closed cells rigid Polyiso foam, expanded without the use of CFC or HCFC, covered on the external side by a 200 µm embossed aluminium facer and on the internal side by an 80 µm aluminium facer.

***Main applications:***
Panels for pre-insulated ductwork

**Note: Technical data sheets and other documentation is available from the website: www.stiferite.com**

## Table summary of main applications

| | | Class B - Class BH | Class S - Class SH | Class SK | GT | GTE | Isoventilato | RP1 - RP2 - RP3 | AI 4 - AI6 - AI8 | BB | IP | P3 | AV4 - AV6 - AV8 | GT3 - GT4 - GT5 | ISOCANALE ALC - ALL - ALE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Roofs | Flat with bituminous mantle in view | ● | | | | | | | ● | | | | | | |
| | Flat with synthetic mantle in view | | ● | | ● | ● | | | | | | | | | |
| | Flat floors or ballasted | ● | ● | | ● | ● | | | ● | ● | | | | ● | |
| | Flat and used as driveway | ● | ● | | | | | | | | | | | | |
| | Pitched under clay tiles or sheet metal | ● | ● | | ● | ● | | | ● | | | | | ● | |
| | Pitched with full ventilation or micro-ventilated | | ● | | ● | ● | ● | | | | | | | | |
| Walls | Insulation in wall cavities | | ● | | ● | ● | | | ● | | | | ● | | |
| | Insulation of inside walls and under load | | ● | | ● | ● | | ● | | | | | | | |
| | Outside insulation as in ETICSystems applications | | | ● | | | | | | | | | | | |
| | Outside insulation as in ventilated ETICSystems applications | | | ● | | ● | | | ● | | | | ● | | |
| Floors | Civil or industrial floors | | ● | | ● | ● | | | | ● | | | | | |
| | Heated floors | | | | ● | ● | | | ● | | | | ● | | |
| | For walk-in refrigerator cells and industrial floors | ● | ● | | ● | ● | | | | | | | | | |
| | Pre-insulated ventilation ducts | | | | | | | | | | | | | | ● |
| | Industrial insulation | | | | | | | | | | ● | ● | | | |

# LEED credits of which STIFERITE products can contribute

## Sustainable Sites (SS)

### SS PREREQUISITE 1: CONSTRUCTION ACTIVITY POLLUTION PREVENTION

| Standard reference | New construction (NC) |
|---|---|
| Prerequisite | **SS p 1** |
| Points | **required** |

**Objective** – The main goal of the pre-requisite is to reduce the pollution generated by activities from a construction site by controlling events caused by the erosion of the soil, sedimentation in the waters and the production of dust.
It is mandatory that the pre-requisite is respected, otherwise the office building may not apply certification. The construction company is required to write Plan of Control of the Erosion and of the Sedimentation for all the construction activities related to the project. The Plan must satisfy all of the technical requirements outlined in the "Guide of the Plan for Erosion and Sedimentation Control" prepared by GBC in Italy and based on the EPA Construction General Permit (CGP) of 2003.

#### REASONS FOR THE CONTRIBUTION

STIFERITE'S products do not directly contribute to the requirement outlined by SSp1, but the company responsible for the application of the products must pay close attention to not disperse dust particles to the environment. In the case where the material needs to be cut, either by the use of a rigid blade cutter (for panels of low thickness) and/or an electric tool (for panels of elevated thicknesses), an exhaust system must be used.

#### DOCUMENTATION REQUIRED

Must supply a specific on site working manuel (description) of the panels, showing that it complies to the Plan.

### SS CREDIT 7.2: HEAT ISLAND EFFECT—ROOF

| Standard reference | New Construction (NC) |
|---|---|
| Credit | **SS c 7.2** |
| Punts | **1** |

**Objective** – To reduce heat islands to minimize impacts on microclimates and human wildlife habitats.
To reach this goal, roofing material with a high solar reflectance index (SRI) must be installed on a minimum of 75% of the roof surface. Otherwise, a green roof system must be used for at least 50% of the roof surface.

#### REASONS FOR THE CONTRIBUTION

In order to contribute to the credit, STIFERITE calls for roof panels to be installed under other material (waterproofing mantles, roof tiles, clay roof tiles, sheet metal etc…) and suggests they be in bright colour and high SRI. Since the panels are not in direct contact with the outside light, there is no need for verification of the SRI value. STIFERITE'S panels are compatible with all roof material of high Solar Reflection Index and are ideal for green roofsi.

#### DOCUMENTATION REQUIRED

Must supply the test based on the norm of reference for the credit (ASTM Standard E1980-01 and ASTM E408-71 (1996) and 1 which shows the SRI value of the product the will be installed on the construction site.

## LEED credits of which STIFERITE products can contribute

### Energy and Atmosphere (EA)

#### EA PREREQUISITE 2: MINIMUM ENERGY PERFORMANCE

| Standard reference | New Construction (NC) |
|---|---|
| Prerequisite | **EA p 2** |
| Points | **required** |

**Objective** – To establish the minimum level of energy efficiency for the proposed building and systems, and to reduce environmental and economic impacts associated with excessive energy use.
Comply with the mandatory provisions (Sections 5.4, 6.4 limited to installations of ventilation and air-conditioning, 8.4, 9.4, and 10,4) from ASHRAE/IESNA 90.1-2007 (with Errata but without Addenda).

**REASONS FOR THE CONTRIBUTION**

The insulation board contributes indirectly to the prerequisite, since its technical characteristics, along with all of the other material used in construction of the building, are inserted in the calculation software to determine the final result of the energetic performance of the entire building.

**DOCUMENTATION REQUIRED**

Technical data sheets of STIFERITE'S products, energetic performance of the insulating material.

#### EA CREDIT 1: OPTIMIZE ENERGY PERFORMANCE

| Standard reference | New Construction (NC) |
|---|---|
| Credit | **EA c 1** |
| Points | **1 - 19 points** |

**Objective** – To achieve increasing levels of energy performance beyond the prerequisite standard. The construction designer may choose between two options to achieve the credit. Option 1 calls for the simplified procedure to determine the energy performance of the floor and roof decking) and envelope (the exterior skin and framing, excluding window assemblies and non-structural roofing material).

**REASONS FOR THE CONTRIBUTION**

The insulation board contributes indirectly to the prerequisite, since its technical characteristics, along with all of the other material used in construction of the building, are inserted in the calculation software to determine the final result of the energetic performance of the entire building.

**DOCUMENTATION REQUIRED**

Technical data sheets of STIFERITE'S products, energetic performance of the insulating material.

## LEED credits of which STIFERITE products can contribute

### Materials and Resources (MR)

#### MR CREDIT 1.1: BUILDING REUSE - MAINTAIN EXISTING WALLS, FLOORS AND ROOF

| Standard reference | New Construction (NC) |
|---|---|
| Credit | **MR c 1.1** |
| Points | **1 - 3 points** |

**Objective** – To extend the lifecycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport. Maintain at least 75% (based on surface area) of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing, excluding window assemblies and non-structural roofing material).

**REASONS FOR THE CONTRIBUTION**

The durability of the physical characteristics and the insulation performance of expanded rigid polyurethane foam products make it possible and advantageous to recover and reuse the material in new structures. Naturally the recover and reuse of the panels depends heavily on the type of installations. Constructive methods using mechanical fixing of the various components of the structure, ease the recover and reuse operations.

**DOCUMENTATION REQUIRED**

None

#### MR CREDIT 1.2: BUILDING REUSE - MAINTAIN INTERIOR NONSTRUCTURAL ELEMENTS

| Standard reference | New Construction (NC) |
|---|---|
| Credit | **MR c 1.2** |
| Points | **1** |

**Objective** – To extend the lifecycle of existing building stock, conserve resources, retain cultural resources, reduce waste and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.
Use existing interior non-structural elements (e.g., interior walls, doors, floor coverings and ceiling systems) in at least 50% (by area) of the completed building, including additions. If the project includes an addition with floor area more than 2 times the floor area of the existing building, this credit is not applicable.

**REASONS FOR THE CONTRIBUTION**

The durability of the physical characteristics and the insulating properties of the polyurethane expanded rigid insulation board makes it possible and advantages to recuperate and re-use on new constructions.

**DOCUMENTATION REQUIRED**

None

## LEED credits of which STIFERITE products can contribute

### Materials and Resources (MR)

#### MR CREDIT 2: CONSTRUCTION WASTE MANAGEMENT

| Standard reference | New Construction (NC) |
|---|---|
| Credit | **MR c 2** |
| Points | **1 - 2 points** |

**Objective** - Divert construction, demolition and land-clearing debris from disposal in landfills and incinerators. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites. Calculations can be done by weight or volume, but must be consistent throughout.
Designate a specific area(s) on the construction site for segregated or comingled collection of recyclable materials, and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials.

**REASONS FOR THE CONTRIBUTION**

The responsibility of such credit is of the construction company, but Stiferite can help in obtaining the credit by making sure that its products are packaged with recyclable material and/or picking up the material following the delivery.

**DOCUMENTATION REQUIRED**

None. Stiferite may indicate on the delivery note that the packaging material is recyclable.

#### MR CREDIT 4: RECYCLED CONTENT

| Standard reference | New Construction (NC) |
|---|---|
| Prerequisite | **MR c 4** |
| Point | **1 - 2 points** |

**Objective** – To increase demand for building products that incorporate recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials.
Use materials with recycled content such that the sum of post-consumer recycled content plus 1/2 of the pre-consumer content constitutes at least 10% or 20%, based on cost, of the total value of the materials in the project.
The percentage of recycled content of a material assembly is determined by weight. Furniture may be included if it is included consistently in Material and Resources credits 3, 4, 5, 6 and 7.
The supplier of the product must supply an environmental declaration of Type II, based on the European norm UNI EN ISO 14021, specifying the minimum recyclable content in weight of the material pre and post consumer.

**REASONS FOR THE CONTRIBUTION**

Stiferite contributes to the credit since in its quality control procedure, it is able to declare the percentage of the recyclable material present in each of its products. For reasons of pre-caution, the percentage of the recyclable content is defined pre-consumer, in-spite one part is recycled post-consumer.

**DOCUMENTATION REQUIRED**

Declaration of Type II based on the norm UNI EN ISO 1402 or certificate from a third party that reports the minimum percentage of the recyclable content in the product.

## LEED credits of which STIFERITE products can contribute

### Materials and Resources (MR)

#### MR CREDIT 5: REGIONAL MATERIALS

| Standard reference | New Construction (NC) |
|---|---|
| Credit | **MR c 5** |
| Points | **1 - 2 points** |

**Objective** – To increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.
There are three options for which a building can satisfy the credit. Option one: All building materials or products have been extracted, harvested or recovered, as well as manufactured within a
350 km radius of the project site for a minimum of 10% or 20%, based on cost, of the total materials value.
Option two: The credit is satisfied if the above radius 1050 km of the site, but the transport of the material is done by rail or sea.
Option three: is when both of the above options are satisfied.

Mechanical, electrical and plumbing components and specialty items such as elevators and equipment must not be included in all calculations. Include only materials permanently installed in the project.
Furniture may be included if it is included consistently in Material and Resources credits 3, 4, 5, 6 and 7.

**REASONS FOR THE CONTRIBUTION**

Stiferite contributes to the credit case to case, depending where the project is. Stiferite provides a list of its suppliers when requested.

**DOCUMENTATION REQUIRED**

Letter from the supplier that declares the sites of the extraction and manufacturing of the components

## LEED credits of which STIFERITE products can contribute

### Innovation in Design (ID)

#### ID CREDIT 1: INNOVATION IN DESIGN

| Standard di riferimento | New Construction (NC) |
|---|---|
| Credit | **IP c 1** |
| Point | **1 - 5 points** |

**Objective** – Achieve significant, measurable environmental performance in support of the environment. A point is awarded for each innovation achieved. No more than 5 points under the ID c 1 may be earned. The following aspects must by identified:

Finality of the solution proposed in the credit

The proposed submittals to demonstrate compliance

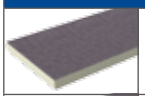
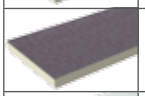
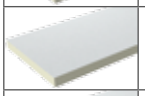
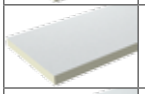
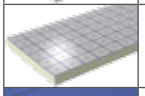
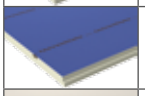
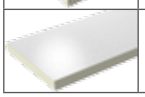
**REASONS FOR THE CONTRIBUTION**

The company has followed the verification LCA, and earned the EPD of some products, therefore can contribute to the credit of innovation of the design for those specific products.

**DOCUMENTATION REQUIRED**

Performance of the documentation related to LCA and/or EPD.

## Credit summary table in reference to the LEED® from which STIFERITE'S proc

| | | Sustainable Sites | | Energy and Atmosphere | |
|---|---|---|---|---|---|
| stiferite® thermal insulation | | ***Prerequisite SS1*** | ***Credit SS 7.2*** | ***Prerequisite EA2*** | ***Credit EA 1*** |
| | | Construction Activity Pollution Prevention | Construction Activity Pollution Prevention | Minimum Energy Performance | Optimize Energy Performance |
|  | ***Class B*** | ● | ● | ● | ● |
|  | ***Class BH*** | ● | ● | ● | ● |
|  | ***Class S*** | ● | ● | ● | ● |
|  | ***Class SH*** | ● | ● | ● | ● |
|  | ***Class SK*** | ● | | ● | ● |
|  | ***GT*** | ● | ● | ● | ● |
|  | ***GTE*** | ● | ● | ● | ● |
|  | ***Isoventilato*** | ● | ● | ● | ● |
|  | ***RP1 - RP2 - RP3*** | ● | | ● | ● |
|  | ***AI4 - AI6 - AI8*** | ● | ● | ● | ● |
|  | ***BB*** | ● | | ● | ● |
|  | ***IP*** | ● | | ● | ● |
|  | ***P3*** | ● | | ● | ● |
|  | ***AV4 - AV6 - AV8*** | ● | ● | ● | ● |
|  | ***GT3 - GT4 - GT5*** | ● | ● | ● | ● |
|  | ***ISOCANALE ALC - ALL - ALE*** | ● | ● | ● | ● |

## lucts can contribute

| Materials and Resources | | | | | Innovation in Design |
|---|---|---|---|---|---|
| **Credit MR 1.1** | **Credit MR 1.2** | **Credit MR 2** | **Credit MR 4** | **Credit MR 5** | **Credito ID 1** |
| Building Reuse-Maintain Existing Walls, Floors, and Roof | Building Reuse-Maintain Interior Nonstructural Elements | Construction Waste Management | Recycled Content | Regional Materials | Innovation in Design |
| ● | | ● | ● | ● | ● |
| ● | | ● | ● | ● | |
| ● | ● | ● | ● | ● | ● |
| ● | | ● | ● | ● | |
| ● | ● | ● | ● | ● | ● |
| ● | | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | |
| ● | | ● | ● | ● | |
| ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | |
| ● | ● | ● | ● | ● | |
| ● | | ● | ● | ● | |
| ● | | ● | ● | ● | |
| ● | ● | ● | ● | ● | |
| ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | |

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The document
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**Research and Development Division**
**STIFERITE Srl**

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IL DISTRETTO ENERGIA AMBIENTE
LEADER IN LEED®

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