MAPPY®
ITALIA SPA

THERMAL AND ACOUSTIC INSULATION SYSTEMS

MAPPYSIL CR 400

MAPPYSIL CR 404

MAPPYFIBER TREVIRA

SILSONIC

24/01/2019
IT04-17060701
IT04-19012301

Sustainability and Environment

We improve the quality of life of individuals respecting the environment where we live promoting the culture of silence and energy saving.
MAPPY ITALIA improves your wellness because intervenes in the environment where you live:
if there is no silence, there is no listening;
if there is no listening, there is no communication;
if there is no communication, there is no relationship.

Summary

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
Tel +39 049 9003612
Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
www.quality-net.it

MAPPY® ITALIA SPA

SUSTAINABILITY AND ENVIRONMENT

1. COMPANY PROFILE

Experience and professionalism at your service

MAPPY ITALIA SPA is the first Italian market-leading company boasting over 40 years of experience in the acoustic and thermal insulation field. The company was created in 1974 and has established itself over the years thanks to the insights and skills of engineers and technicians from the chemical/plastic industry, who boast a rich experience in the sector. The company has implemented a Quality Management System based on the UNI EN ISO 9001 standard.

One company, three sectors - Our products can be used anywhere there is a sound problem:

- industry (generators, refrigerators, air conditioning, HVAC; marine, automotive, aeronautical industries; electricity, appliance manufacturers, woodwork and carpentry sectors)
- in the construction industry
- in DIY (supermarkets, hardware and household goods)

All MAPPY ITALIA products are entirely made in Italy.

At the forefront with Mappy Italia's R&D Lab

MAPPY ITALIA SPA is deeply committed to the quality of its products and the development of new, environmentally sustainable raw materials. For this reason in 2010 MAPPY ITALIA SPA renovated its Research & Development Laboratory by expanding it and providing it with highly qualified staff and a new set of instrumentations capable of performing chemical and physical analysis in addition to mechanical tests according to the most important relevant international standards. MAPPY ITALIA SPA collaborates with universities and international research groups and is supported by accredited laboratories and bodies for the certification of the acoustic, thermal and fire/smoke reaction properties of its products as well as LEED, CE and MED marking.

Where we are worldwide: MAPPY ITALIA SPA's global sales network

MAPPY ITALIA SPA manufactures its products and materials in Italy and distributes them worldwide. The distribution in Italy is carried out mainly under MAPPY

ITALIA SPA's brand, whereas foreign distribution is performed under the brands of large and important client companies to which MAPPY ITALIA SPA is a high quality and reliable partner. We provide our customers an all-round service, with support and customized packaging for the DIY line, as well as technical advice and development of ad-hoc products, to meet all of our customer's requirements and needs. MAPPY ITALIA SPA is present in: Italy, Europe, Russia, Middle East, North Africa, South America, Oceania.

Production

MAPPY ITALIA SPA offers a complete range of solutions for industry, construction and DIY, with sound absorbing and sound insulating products, damping materials and gaskets. The products are available in any sizes to meet all of our customer's needs: sheets, rolls and custom cuts. MAPPY ITALIA SPA has the latest generation machineries to process various types of materials such as rubber, foams and fibers.

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Customer service

MAPPY ITALY SPA is committed to offer an impeccable customer service and support:

- Customer Service to support the sales department
- Careful, prepared and available consultants to advice on the most suitable solution to your needs
- Marketing and communication
- Internal laboratory
- Organized and accurate logistics
- After-sales service
- Training courses

Technical assistance

To fully satisfy the expectations of its customers, MAPPY ITALIA SPA provides, in addition to its knowledge and experience, a team of technicians to support designers and companies.

- Laboratory analyses
- Acoustic and thermal consultancy
- Assistance at construction site during work execution
- Development of executive details
- Evaluation and validation of acoustic requirements of buildings

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1.1 THERMAL AND ACOUSTIC INSULATION SYSTEMS: PRODUCTS ANALYZED IN THE DOCUMENT

The purpose of this document is to describe compliance with LEED® rating system of some Mappy Italia products. Below is a brief description of the composition and main functions about these products. For a more specific description, refer to the technical data sheets.

MAPPYSIL CR 400

MAPPYSIL CR 400 is a composite panel for acoustic and thermal insulation made with new generation thermo-linked polyester fibers and a very flexible elastomeric membrane. PET fibers are safe and do not pose any health risk. MAPPYSIL CR 400 is eco-friendly because the elastomeric barrier is produced from recycled polymers and it does not contain polluting substances such as bitumen; the polyester fibers are obtained from PET plastic bottles.

MAPPYSIL CR 400 is the ideal product for thermal and acoustic insulation of walls. It is flexible and can be easily placed inside the partitions of double walls, fixed on false ceilings, and can be used also for coverings and roofing.

MAPPYSIL CR 404

MAPPYSIL CR 404 is an eco-friendly and a high-performance panel for acoustic and thermal insulation of pipes and ductwork. It has a very low flammability in fact it is classified as Class A according to ASTM E 84. It is a composite material consisting of three layers: an aluminum foil finish reinforced with fiberglass scrim that provides mechanical strength and corrosion resistance; a high density flexible barrier available in different weights to increases the mass and to improve the sound insulation; a polyester mat to decouple the heavy barrier from the noise source. The polyester fibers are safe and do not pose any health risk. Furthermore they are environmentally friendly because they obtained from PET plastic bottles.

MAPPYSIL CR 404 is the ideal product for acoustic insulation of pipelines, HVAC ducts, outlet columns, heat exchangers, compressors and engines.

SILSONIC

SILSONIC is an eco-friendly panel for acoustic and thermal insulation made with new generation thermo-linked polyester fibers. PET fibers are safe and do not pose any health risk. Furthermore they are environmentally friendly because they obtained from PET plastic bottles.

SILSONIC is the ideal product for thermal and acoustic insulation of walls. It is flexible and can be easily placed inside the partitions of double walls and fixed on false ceilings.

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MAPPYFIBER® TREVIRA

MAPPYFIBER® TREVIRA Piano is an acoustic panel for sound and thermal insulation.

Each panel is produced entirely in Italy and it is composed exclusively by polyester fibers coated with a Trevira Fabric to provide a further elegance when it is used as design element: any panel perfectly combines the aesthetic style and decorative effect with the highest technical performances. Furthermore MAPPYFIBER® TREVIRA panels can be completely customized to the needs of the client with digitally printed pictures.

MAPPYFIBER® TREVIRA complies with the latest safety regulations in public places: in case of fire it does not spread flames nor it emits toxic fumes. Polyester fibers are perfectly safe because they do not pose any health risk and do not degrade over time. Furthermore they are environmentally-friendly because they are totally recyclable and are obtained from PET plastic bottles. The panel can be used in places with high humidity because it is permeable to water vapor and allows a correct transpiration of walls and ceilings.

MAPPYFIBER® TREVIRA is a decorative panel suitable to improve the acoustic comfort of any room reducing the reverberation and the echo effect with efficiency and elegance. Its aesthetic quality meets indeed the multiple needs of interior designers as well as those of architects.

Each flexible panel has been designed to be assembled together with others in an array to create decorative compositions for walls and ceilings. This unique product reduces the noise and provides a total creative freedom improving also the viewing experience.

Mappyfiber® Trevira is the perfect product for public and private spaces such as: kindergartens, schools, recreation rooms in general, music rooms, recording studios, theaters, cinemas, nightclubs, dance halls, pubs, hospitals, offices, conference centres, hotels, restaurants, cafeterias, gyms, spas, swimming pools, shops, and shopping malls.

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1.2 QUALITY AND SUSTAINABILITY POLICIES

The Quality Policy of MAPPY ITALIA was founded with the dual aim of obtaining a high quality of products and provided services, and the complete satisfaction of all stakeholders, customers, and employees up to the suppliers. For this reason, the Company has a Quality Management System based on the UNI EN ISO 9001.

MAPPY ITALIA pursues continuous improvement by periodically analyzing the compliance of the entire structure of our Quality Policy. To make the goals measurable and verifiable, the company defines indicators through the improvement plan and is committed to providing the necessary resources: technical, economic and professional, to ensure that quality objectives are fully achieved.

MAPPY ITALIA also continually strives to adapt its structures and systems to the standards of public health and safety at work, environmental protection and process any personal data held by the laws on confidentiality.

MAPPY ITALIA strives to ensure that the objectives set last year by the Management, are understood and implemented at all organizational levels through the commitment and support of all contributing employees; respective of each employee's area of specialty and responsibility..

It is impossible to promote a culture of silence with no respect for the environment where we live. For this reason MAPPY ITALIA applies environmental protection policies on a daily basis. From the choice of its suppliers throughout the production process to packaging and transport, MAPPY ITALIA prefers materials and products which are:

- RECYCLABLE
- REUSABLE
- REGENERATED
- WITH REDUCED CO2 EMISSIONS

The Company also offers a special line designed for green building, the Mappy Natural line. A range of products made from natural fibers with high technical performances..

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2. GREEN BUILDING ASSOCIATIONS AND RATING SYSTEMS

2.1 LEED® Rating System

Sources: USGBC, GBC ITALIA

LEED® - Leadership in Energy and Environmental Design - is a building certification system that was established on a voluntary basis and is applied in more than 140 countries worldwide. LEED standard is born in America by U.S. Green Building Council (USGBC), a nonprofit association founded in 1993, which now counts more than 20,000 members and has as its purpose the promotion and development of a comprehensive approach to sustainability, giving an acknowledgment to the virtuous performance in key areas of human and environmental health.

LEED standards, developed by USGBC, indicate the requirements to build environmentally friendly buildings, from an energy point of view and from the point of view of the consumption of all environmental resources involved in the implementation process.

LEED is a voluntary and consensus-based, for design, construction and management of sustainable land areas and high-performance buildings and is becoming more and more international. It can be used on any type of building and promotes an integrated design system that covers all aspects of the building.

Certification is a third party independent audit of the performance of an entire building (or part of it) and / or urban areas. Internationally acknowledged LEED certification states that a building is environmentally friendly and is a healthy place to live and work.

Considering the entire process, from design to construction to testing, LEED requires a holistic approach, otherwise you can not achieve their goals. Only with a comprehensive integrated design and coordination with all the stakeholders involved you can create a harmonious building in all areas mentioned above.

Competitive advantages for those who adopt LEED standards, whether professionals or companies, are identifiable especially in the high quality of the building, in significant savings of operating costs that these buildings allow to obtain when compared to traditional buildings. In addition obviously to the benefits of third party certification.

LEED certification, in fact, provides a common approach to the market, on which to base choices and a measurable standard for every feature treated.

The LEED rating system is structured in a set of protocols (manuals) depending on the type of building you want to certify. We will then have a protocol certifying new buildings and major renovations (LEED New Buildings, LEED BUILDING DESIGN AND COSTRUCTION LEED BD + C), a LEED FOR SCHOOLS protocol, a certification of retail and The building's interior (LEED COMMERCIAL INTERIOR and LEED RETAIL), a protocol certifying existing buildings (LEED EXISTING BUILDING OPERATION AND MAINTENANCE, LEED EBOM), a protocol certifying building sets, Neighborhoods (LEED FOR NEIGHBORHOOD), and so on.

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The setting of all these protocols is the same, in the sense that they are all organized in the same areas or chapters, which are:

- Sustainable Sites (SS)
- Water Efficiency (WE)
- Energy and Atmosphere (EA)
- Material and Resources (MR)
- Indoor Environmental Quality (IEQ)

For completeness, there are two other areas / chapters, which concern aspects that are more related to the certification process:

- Regionality: credits (points) are made in certain geographical areas for the strong relationship between territorial context and credit requirements;
- Innovation in design: they highlight aspects that either in the specific protocol are not considered but are present in the other protocols, or they give more performance scores for some protocol credits. All is regulated by the text of the manuals.

All these areas / chapters contain the prerequisites and credits. Prerequisites are mandatory and do not score, while credits can be chosen or not by the design team but are the ones that give the score, which must be achieved to get the certification level defined as a goal by certification.

Prerequisites and credits cover all aspects of a building, plant, design details, soil permeability, drinking water consumption, site relationship with servicemen near the building, or availability of public transport. Some of these also refer to materials, meaning materials have features that help the building to meet certain requirements defined in prerequisites and protocols. What was done in this document was the first step to identify the possible credits that could be covered by the products of MAPPY ITALIA considered in the project, on the other hand, to verify their characteristics and documentation in line with what is required in the requirements. The credits to which the products can contribute are explained in the following paragraphs.

LEED® rating system certifies building, does not certify individual products or components, but these may help to meet protocol requirements and consequently to obtain the relevant building scores.

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This also implies that the product may not have a score, the score is always and only of the building, but it can help the building get the score.

As already mentioned, in the following paragraphs we will show the excellence of MAPPY® ITALIA SPA in relation to LEED credits. As described first in the text, all protocols are structured in the same areas, and for the most part the credits are the same or similar. In the present work, for the sake of clarity and avoiding unnecessary repetitions (and which could create confusion), reference was made to the LEED NC NUOVE COSTRUZIONI protocol, including all the credits of that protocol that could affect MAPPY ITALIA products taken into account in this document . Credits of other protocols have been added, and therefore there are no new builds in LEED NC, but they are also related to MAPPY ITALIA products[1].

A last note on the LEED system. The LEED rating system is a system that evolves over time. The drafting of this document coincides with a transition period between version 3 of the edited protocol in 2009 and version 4. Considering that there are still many projects that will be certified according to version 3 (2009) and that there are requests for Characteristics of version 4 include gray boxes that describe the contributions compared to version 4 or simply relate the credit considered in the two versions if the features required for the product are similar.

At the end of this document, a summary table will represent the credits contributions for the two versions of the protocols.

[1] This refers to credits related to acoustic performance, which are included in the 2009 LEED FOR SCHOOLS protocol

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35035 Mestrino (PD)
Tel +39 049 9003612
Fax +39 049 9005725
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3.MAPPY ITALIA AND LEED® RATING SYSTEM

The LEED® rating system only certifies buildings and buildings. However, products can help meet the requirements of LEED credits, and thus help the building get the scores required for certification. In this part of the document you can see the description of the credits that Mappy Italia products considered in this document can contribute. This description is the result of a careful analysis of features and products in the light of the requirements, which led the company to adopt specific procedures for projects related to LEED certification projects.

In Figure 1 and Figure 2, the checklist of credits (ie prerequisite titles and credits in the relevant reference areas and the scores assigned to the building) are shown and the credits to which the products in this document can contribute through A red box, considering the two main protocols (considered their application on the one hand, and completeness over the credits of interest), namely "LEED FOR NEW CONSTRUCTION AND MAJOR RENOVATION V 2009 (LEED NC 2009)" and "LEED FOR NEW CONSTRUCTION AND MAJOR RENOVATION V4 (LEED NC V4) ". For the text of credits in Italian was taken as reference LEED NC ITALIA 2009, as for the description of the areas of the credits.

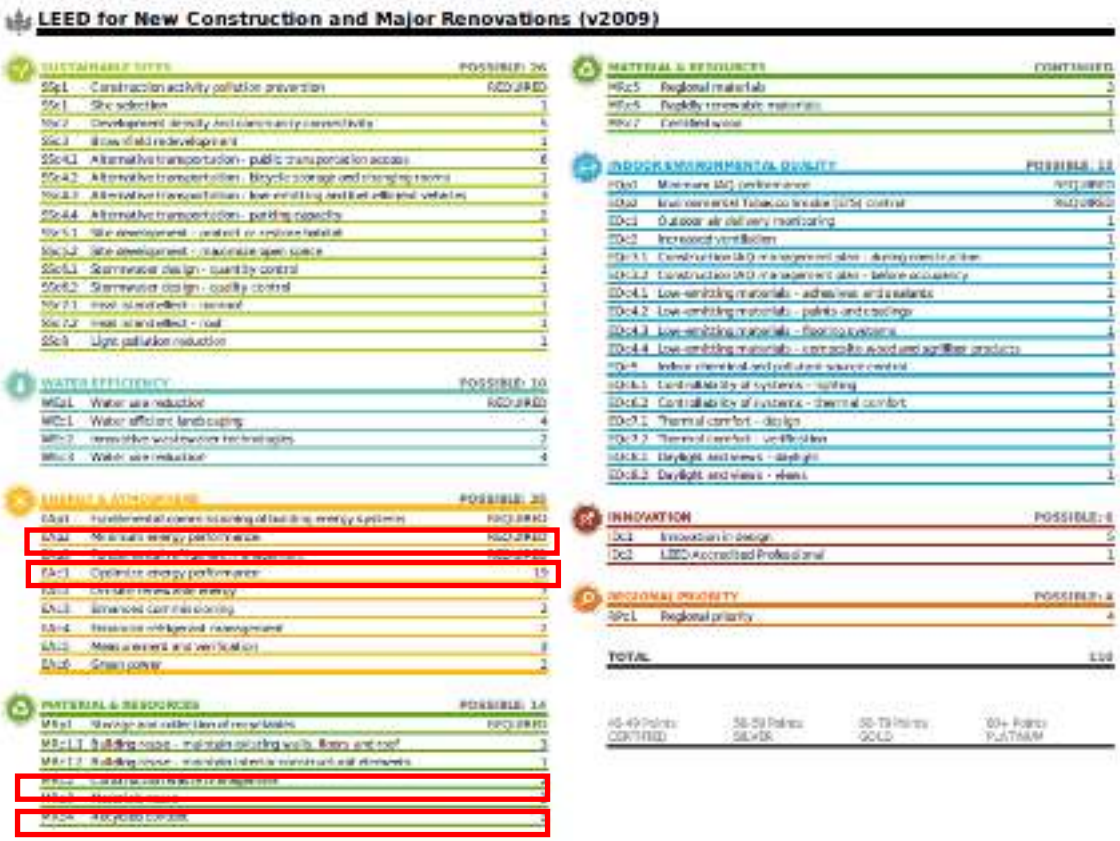

FIGURE 1

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
Tel +39 049 9003612
Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
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LEED for New Construction in Schools (v2009)

SUSTAINABLE SITES		POSSIBLE: 24
SSp1	Construction activity pollution prevention	REQUIRED
SSp2	Environmental site assessment	REQUIRED
SSc1	Site selection	1
SSc2	Development density and community connectivity	4
SSc3	Brownfield redevelopment	1
SSc4.1	Alternative transportation - public transportation access	4
SSc4.2	Alternative transportation - bicycle storage and changing rooms	1
SSc4.3	Alternative transportation - low-emitting and fuel-efficient vehicles	2
SSc4.4	Alternative transportation - parking capacity	2
SSc5.1	Site development - protect or restore habitat	1
SSc5.2	Site development - maximize open space	1
SSc6.1	Stormwater design - quantity control	1
SSc6.2	Stormwater design - quality control	1
SSc7.1	Heat island effect - nonroof	1
SSc7.2	Heat island effect - roof	1
SSc8	Light pollution reduction	1
SSc9	Site master plan	1
SSc10	Joint use of facilities	1

WATER EFFICIENCY		POSSIBLE: 11
WEp1	Water use reduction	REQUIRED
WEc1	Water efficient landscaping	4
WEc2	Innovative wastewater technologies	2
WEc3	Water use reduction	4
WEc4	Process water use reduction	1

ENERGY & ATMOSPHERE		POSSIBLE: 33
EAp1	Fundamental commissioning of building energy systems	REQUIRED
EAp2	Minimum energy performance	REQUIRED
EAp3	Fundamental refrigerant management	REQUIRED
EAc1	Optimize energy performance	19
EAc2	On-site renewable energy	7
EAc3	Enhanced commissioning	2
EAc4	Enhanced refrigerant management	1
EAc5	Measurement and verification	2
EAc6	Green power	2

MATERIAL & RESOURCES		POSSIBLE: 13
MRp1	Storage and collection of recyclables	REQUIRED
MRc1.1	Building reuse - maintain existing walls, floors and roof	2
MRc1.2	Building reuse - maintain interior nonstructural elements	1
MRc2	Construction waste management	2
MRc3	Materials reuse	2
MRc4	Recycled content	2
MRc5	Regional materials	2
MRc6	Rapidly renewable materials	1
MRc7	Certified wood	1

INDOOR ENVIRONMENTAL QUALITY		POSSIBLE: 19
EQp1	Minimum IAQ performance	REQUIRED
EQp2	Environmental Tobacco Smoke (ETS) control	REQUIRED
EQp3	Minimum acoustical performance	REQUIRED
EQc1	Outdoor air delivery monitoring	1
EQc2	Increased ventilation	1
EQc3.1	Construction IAQ management plan - during construction	1
EQc3.2	Construction IAQ management plan - before occupancy	1
EQc4	Low-emitting materials	4
EQc5	Indoor chemical and pollutant source control	1
EQc6.1	Controllability of systems - lighting	1
EQc6.2	Controllability of systems - thermal comfort	1
EQc7.1	Thermal comfort - design	1
EQc7.2	Thermal comfort - verification	1
EQc8.1	Daylight and views - daylight	3
EQc8.2	Daylight and views - views	1
EQc9	Enhanced acoustical performance	1
EQc10	Mold prevention	1

INNOVATION		POSSIBLE: 6
IDc1	Innovation in design	4
IDc2	LEED Accredited Professional	1
IDc3	The school as a teaching tool	1

REGIONAL PRIORITY		POSSIBLE: 4
RPc1	Regional priority	4

TOTAL	110

40-49 Points	50-59 Points	60-79 Points	80+ Points
CERTIFIED	SILVER	GOLD	PLATINUM

FIGURE 2

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Via Aquileia, 56
35035 Mestrino (PD)
Tel +39 049 9003612
Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
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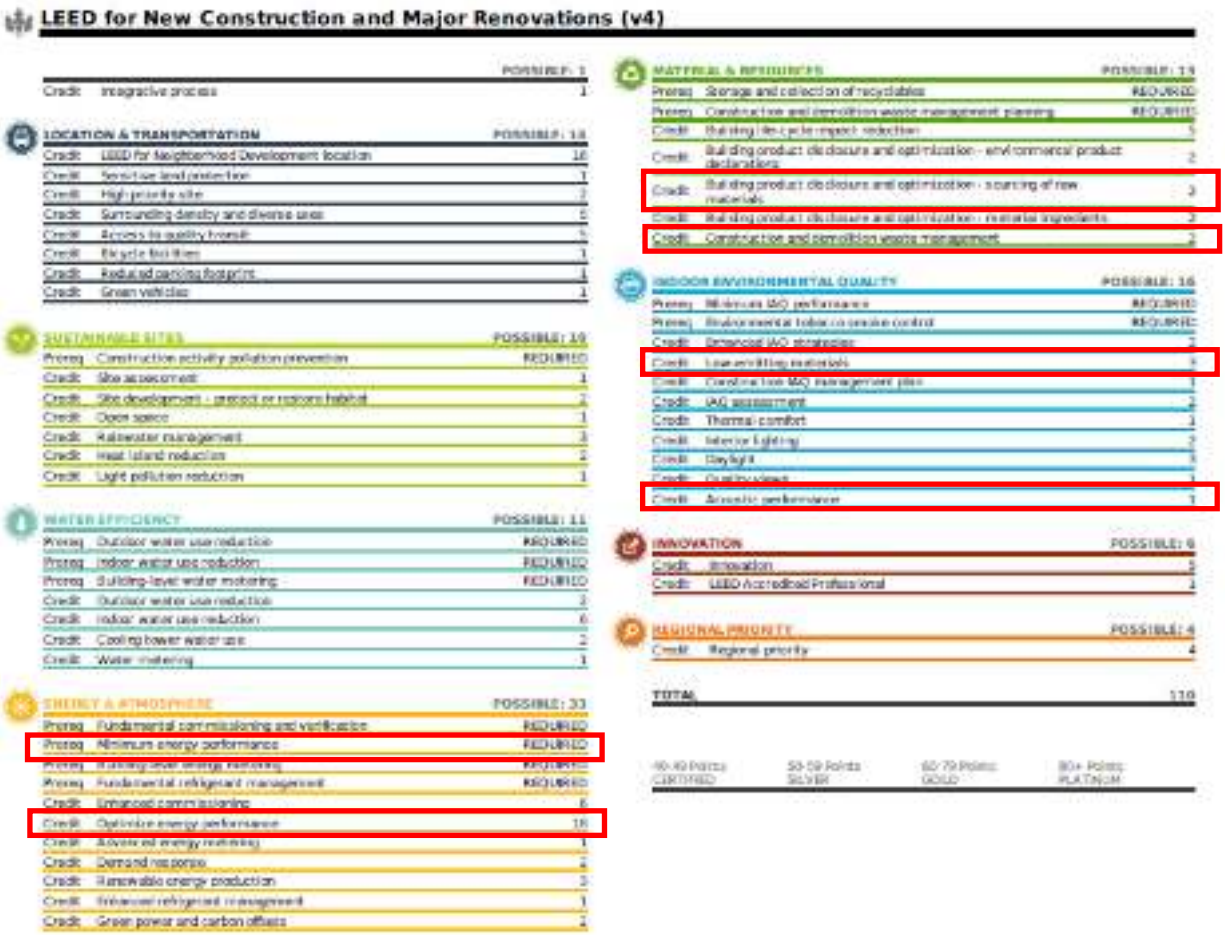

LEED for New Construction and Major Renovations (v4)

Credit	Integrative process	1

LOCATION & TRANSPORTATION — POSSIBLE: 16

Credit	LEED for Neighborhood Development location	16
Credit	Sensitive land protection	1
Credit	High priority site	2
Credit	Surrounding density and diverse uses	5
Credit	Access to quality transit	5
Credit	Bicycle facilities	1
Credit	Reduced parking footprint	1
Credit	Green vehicles	1

SUSTAINABLE SITES — POSSIBLE: 10

Prereq	Construction activity pollution prevention	REQUIRED
Credit	Site assessment	1
Credit	Site development - protect or restore habitat	2
Credit	Open space	1
Credit	Rainwater management	3
Credit	Heat island reduction	2
Credit	Light pollution reduction	1

WATER EFFICIENCY — POSSIBLE: 11

Prereq	Outdoor water use reduction	REQUIRED
Prereq	Indoor water use reduction	REQUIRED
Prereq	Building-level water metering	REQUIRED
Credit	Outdoor water use reduction	2
Credit	Indoor water use reduction	6
Credit	Cooling tower water use	2
Credit	Water metering	1

ENERGY & ATMOSPHERE — POSSIBLE: 33

Prereq	Fundamental commissioning and verification	REQUIRED
Prereq	Minimum energy performance	REQUIRED
Prereq	Building-level energy metering	REQUIRED
Prereq	Fundamental refrigerant management	REQUIRED
Credit	Enhanced commissioning	6
Credit	Optimize energy performance	18
Credit	Advanced energy metering	1
Credit	Demand response	2
Credit	Renewable energy production	3
Credit	Enhanced refrigerant management	1
Credit	Green power and carbon offsets	2

MATERIALS & RESOURCES — POSSIBLE: 13

Prereq	Storage and collection of recyclables	REQUIRED
Prereq	Construction and demolition waste management planning	REQUIRED
Credit	Building life-cycle impact reduction	5
Credit	Building product disclosure and optimization - environmental product declarations	2
Credit	Building product disclosure and optimization - sourcing of raw materials	2
Credit	Building product disclosure and optimization - material ingredients	2
Credit	Construction and demolition waste management	2

INDOOR ENVIRONMENTAL QUALITY — POSSIBLE: 16

Prereq	Minimum IAQ performance	REQUIRED
Prereq	Environmental tobacco smoke control	REQUIRED
Credit	Enhanced IAQ strategies	2
Credit	Low-emitting materials	3
Credit	Construction IAQ management plan	1
Credit	IAQ assessment	2
Credit	Thermal comfort	1
Credit	Interior lighting	2
Credit	Daylight	3
Credit	Quality views	1
Credit	Acoustic performance	1

INNOVATION — POSSIBLE: 6

Credit	Innovation	5
Credit	LEED Accredited Professional	1

REGIONAL PRIORITY — POSSIBLE: 4

Credit	Regional priority	4

TOTAL	110

40-49 Points	50-59 Points	60-79 Points	80+ Points
CERTIFIED	SILVER	GOLD	PLATINUM

FIGURE 3

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SUSTAINABLE SITE AREA

Choosing the site where building the building is one of the key components of sustainability in construction. The environmental restoration of damage generated by constructions typically takes several years of work.

The "Sustainable Site" section deals with environmental aspects linked to the site of construction with particular reference to the management of external areas and the relationship between the building and the surrounding environment. Credits from the " Sustainable Site " area for LEED New Construction promote the following measures:

- Selection and development of the site;
- Reduction of emissions associated with transport
- Creating a Sustainable Landscape
- Protection of local ecosystems
- Management of the outflow of the meteoric waters
- Reduction of the heat island effect for external paving and roofing
- Reduction of light pollution.

Mappy Italia's products do not relate to credit requirements in this area.

WATER EFFICIENCY AREA

This section aims to reduce the use of drinking water, inside the building and outside the building. Solutions within the building consider reduced streams of taps, toilets etc. Outside the building the goal is to reduce the use of drinking water for irrigation, thus using rainwater, native vegetation, gray water recovery, etc.

Mappy Italia's products do not relate to credit requirements in this area.

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MATERIALS AND RESOURCES AREA

The Materials and Resources area is an area that considers the building's sustainability based on the materials that have been used to build it. Pursuing LEED credits in Materials and Resources (MR) can reduce the amount of waste and improve the building's environment through responsible waste management and material selection.

Credits in this section focus on two major issues: the environmental impact of materials entering the construction project and the minimization of disposal. Compared to the first range, Mappy Italia has chosen to use materials with recycled content. Compared to the second area, it can support businesses in managing their waste (recyclable packaging).

In version 4 of the rating system, the Material and Resources area is the area that undergoes major changes, by highlighting good business practices and their environmental and social responsibility.

Below are just the credits in the Materials and Resources area that Mappy Italia products considered in this document can contribute, namely:

- MRc2-Construction Waste Management
- MRc4-Recycled content

Prerequisites and other area credits consider features that are not relevant to MAPPYITALIA products, such as MRc7-CERTIFIED WOOD credit, which considers new wood components and enhances FSC certified ones. Here is the complete list with a concise description of what is required:

- MRp1 Storage and collection of recyclables: To provide a separate collection area for the users of the building in the project;
- MRc1 Building reuse: Valorization of the parts of the building being reused, in case of major renovations / reconstructions;
- MRc2 Construction waste management: Avoid dumping another percentage of site waste;
- MRc3 Materials reuse: Reuse materials in the building;
- MRc4 Recycled content: Valorization of recycled content in the materials used;
- MRc5 Regional materials: Valorization of materials extracted, processed and assembled within a certain radius from the yard;
- MRc6 Rapidly renewable materials: Enhancement of materials to a recycling cycle of less than 10 years;
- MRc7 Certified wood: Valorisation of new wood certified FSC.

In version 4 of the protocol, in addition to these aspects, there are two new credits that concern:

- product life cycle analysis;
- the chemicals present in the product.

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MR c 2 - Construction waste management

The purpose of this credit is to divert waste from construction and demolition from landfill or incineration.

Reinvest recyclable resources recovered in the production process and redirect reusable materials to appropriate collection sites.

The packaging used is the following:

- wooden pallets (fumigated),
- cardboard boxes
- plt film
- extensible film.

At the specific request, the type and weight of the packaging (indicating gross weight and net weight) can be specified in the invoice.

LEED BD+C V4 - MR c 5 Construction and demolition waste management

Intent: To reduce construction and demolition waste disposed of in landfills and incineration facilities by recovering, reusing, and recycling materials.

The types of packaging used are recyclable.

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MR c 4 – Recycled content

The purpose of this credit is to increase the demand for materials and construction products with recycled content, thus reducing the impacts arising from the extraction and processing of virgin materials..

All the products considered are wholly or partly composed of a polyester fiber. Such polyester fiber is produced with recycled content from plastic bottles. Here are a few percentages, based on information provided by our suppliers.

1. Silsonic: composed of 70% -85% of reclaimed green (processing waste, pre-consumer recycled) or in the case of very low density, 55% -70% of reclaimed green (processing waste, pre consumer recycled) and 15% 20% reprocessed (polyester staple obtained from PET bottles, post consumer recycled);

2. MAPPYSIL CR400: Consisting of two layers of Silsonic, polyester fiber with recycled content as described in the preceding paragraph "1. Silsonic" and a mass. The two fiber plates weigh about 1.2 kg / m^2 on about 3.6 kg / m^2 of total product weight;

3. MAPPYSIL CR404: Consisting of a layer of Silsonic, polyester fiber with recycled content as described in the preceding paragraph "1. Silsonic "and a mass coated with aluminum film. The fiber board weighs about 0.75 kg / m^2 on about 3 kg / m^2 of total product weight;

4. Mappyfiber Trevira: The percentage of post-consumer recycled content (PET bottles, post-consumer recycled) varies according to the product and can be classified as follows:

   4.1. BL White L1: 70% recycled content (49% post consumer, 21% pre consumer);

   4.2. BL White TF L1 + L2: 50% recycled content (35% post consumer, 15% pre consumer);

   4.3. BL Black L1: 75% recycled content (52.5% post consumer, 22.5% pre consumer);

   4.4. BL Black TF L1 + L2: 50% recycled content (35% post consumer, 15% pre consumer).

The percentage of polyester fiber recycled content is constant, but by its nature this fiber may have a variable weight depending on the density of the product and its thickness. For example, Silsonic may have the following weights:

- Thickness 40mm, density 20 kg/m^3, weight approx. 0.80 kg/m^2;
- Thickness 60mm, density 20 kg/m^3, weight approx. 1.20 kg/m^2;
- Thickness 40mm, density 40 kg/m^3, weight approx. 1.60 kg/m^2.

Refer to the technical data sheets for the specific weight of the product.

LEED BD+C V4 - MR c 3 Building product disclosure and optimization - sourcing of raw materials

Intent: To encourage the use of products and materials for which life cycle information is available and that have environmentally, economically, and socially preferable life cycle impacts. To reward project teams for selecting products verified to have been extracted or sourced in a responsible manner.

The products concerned are obtained from polyester fibers obtained from PET plastic bottles.

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
Tel +39 049 9003612
Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
www.quality-net.it

ENERGY AND ATMOSPHERE AREA

The use of electricity produced from fossil fuels, such as oil, natural gas and coal, adversely affects the environment at every stage of its life cycle, starting from the extraction and transport process followed by refining and distribution activities To reach its final consumption.

Green Building designed according to the criteria of sustainable agriculture, address energy-related issues in two ways. First, by reducing the energy needs of the building: the smaller is the energy requirement, the lower the amount of greenhouse gas emitted to meet this requirement. Secondly, using energy forms with less environmental impact, such as sources other than fossil fuels.

Below are the credits of the Energy and Atmosphere area to which the products considered in this Mappy Italia document can contribute, namely:

- EAp2 Minimum energy performance
- EAc1 Optimize energy performance

The other credits considered in this area are not the products of Mappy Italia, but these are mainly design, process and plant choices. Here is the complete list with a concise description of what is required:

- EAp1 Fundamental commissioning of building energy systems: Presence and basic activity of the professional figure of Commissioning;
- EAp2 Minimum energy performance: Minimum levels of energy performance for the building
- EAp3 Fundamental refrigerant management: Not using refrigerants with CFC etc.
- EAc1 Optimize energy performance: Enhancing the efficiency of the building compared to the base model
- EAc2 On-site renewable energy: Valorisation of site energy production (eg photovoltaic)
- EAc3 Enhanced commissioning: Integrative activities that must be performed by the Commissioning figure
- EAc4 Enhanced refrigerant management: More features than refrigerants;
- EAc5 Measurement and verification: Implementation of a Building Consumption Monitoring System;
- EAc6 Green power: Purchase of energy from renewable sources

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
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Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
www.quality-net.it

EA p 2 Minimum energy performance

e

EA c 1 Optimize energy performance

The purpose of this prerequisite and credit is to reach an increasing level of energy performance for buildings and project facilities, superior to the minimum values defined by current legislation and legislation, in order to reduce the economic and environmental impacts associated with excessive consumption of energy.

The EAp2 Minimum Energy Performance Prerequisite provides the minimum energy performance requirements required for the building.

Credit EAc1 Energy Performance Optimization instead enhances the energy efficiency of the building, in particular it allocates a score of 1 to 19 based on the efficiency percentage of the building relative to the base building. The percentage is calculated by dynamically modeling the building, which takes into consideration all building components (wrapping, plants, etc.) and site conditions (day, night, summer, winter, etc.).

The products of Mappy Italia can play an important role in this credit, thanks to their nature of thermal insulators. Below you will find some product reference values in terms of thermal conductivity.

Product	Thermal conductivity
SILSONIC	λ = 0.0321 W\mK
MAPPYSIL CR 400	λ = 0,0328 W\mK
MAPPYSIL CR 404	λ = 0.0330 W\mK
MAPPYFIBER® TREVIRA	λ = 0.0321 W\mK

LEED BD+C V4 – EA p2 Minimum energy performance e EAc2 Optimize energy performance

Intent: To achieve increasing levels of energy performance beyond the prerequisite standard to reduce environmental and economic harms associated with excessive energy use.

QualityNet srl
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35035 Mestrino (PD)
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Fax +39 049 9005725
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www.quality-net.it

INDOOR ENVIRONMENTAL QUALITY AREA

In order to ensure the quality of the internal environment a common effort is needed from the client, the design team, contractors, subcontractors and suppliers. To provide optimum indoor environment quality can be integrated with the Automatic Sensor Building System and individual controls to regulate temperature, humidity and ventilation. Other issues related to indoor air quality covered by the LEED system include verification of thermal comfort, availability and quality of natural light with access to exterior views, acoustics. All these issues can enhance the quality of the indoor environment and optimize confined space for occupants of the building.

The products taken into consideration in this document can help to achieve higher levels of performance than the acoustic characteristics. . Here is the complete list with a concise description of what is required:

- EQp1 Minimum indoor air quality performance: Indication of minimum levels of air exchange within the building
- EQp2 Environmental Tobacco Smoke (ETS) control: Ensure that tobacco smoke does not spread within the building
- EQp3 (LEED FOR SCHOOLS) Minimum acoustical performance: Indicates minimum levels of acoustic performance for the building
- EQc1 Outdoor air delivery monitoring: Recirculation air monitoring
- EQc2 Increased ventilation: Valorisation of ventilation inside the buildings
- EQc3 Construction IAQ management plan: Proper site management to reduce contamination inside the building
- EQc4 Low Emitting Materials: Control of emissions of organic volatile substances and formaldehyde
- EQc5 Indoor chemical and pollutant source control: Monitoring the air quality inside the building
- EQc6 Controllability of systems: Mode of plant management and control
- EQc7 Thermal comfort: Thermal comfort management modes that suit the needs of building users
- EQc8 Daylight and Views: Valorisation of solutions that allow the use of daylight and vision to the outside.
- EQc9 (LEED FOR SCHOOLS) Enhanced acoustical performance: Indoor building acoustic quality

QualityNet srl
Via Aquileia, 56
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www.quality-net.it

LEED FOR SCHOOLS – IEQ P 3 Minimum acoustical performance

LEED FOR SCHOOLS - IEQ C 9 Enhanced acoustical performance

Intent: To provide classrooms that facilitate better teacher-to-student and student-to-student communications through effective acoustical design

The acoustic values obviously depend on the thickness of the products. For specific thicknesses, contact the Technical Department. Below are the values of standard products.

Product	Sound insulation values
SILSONIC	**Rw = 59 dB, STC = 59 db** (double plasterboard 10 + 10 mm, interspace 75 mm double plasterboard 10 + 10 mm) **aw = 1.00 NRC = 1.00** (sp. 80 mm, d. 40 kg/m^3, in adhesion) **aw = 0.90 NRC = 0.90** (sp. 30 mm, d 100 kg/m^3, at 30 cm from the installation surface) **aw = 0.65 NRC = 0.70** (sp. 30 mm, d.100 kg/m^3, in adhesion) **aw = 0.65 NRC = 0.75** (sp. 40 mm, d. 50 kg/m^3, in adhesion) **aw = 0.65 NRC = 0.70** (sp. 40 mm, d. 40, in adhesion)
MAPPYSIL CR 400	**Rw = 56 dB, STC = 56 db** (hollow bricks 12 cm, interspace 30 mm, hollow bricks 8 cm) **Rw = 56 dB, STC = 56 db** (hollow bricks 8 cm, interspace 50 mm, double plasterboard 12.5 + 12.5 mm) **Rw = 63 dB, STC = 64 db** (double plasterboard 10 + 10 mm, interspace 50 mm, plasterboard plate 10 mm, interspace 50 mm, double plasterboard 10 + 10 mm)
MAPPYSIL CR 404	**Rw = 27 dB, STC = 27 db**
MAPPYFIBER® TREVIRA	Mappyfiber Trevira Flat **aw=0.75 NRC=0.85** (in adhesion) **aw=0.85 NRC=0.80** (at 30 cm from the installation surface) Mappyfiber Trevira Domed **aw=0.70 NRC=0.80** (in adhesion) **aw=0.85 NRC=0.85** (at 30 cm from the installation surface)

LEED BD+C V4 IEQ C 9 - ACOUSTIC PERFORMANCE

Intent: To provide workspaces and classrooms that promote occupants' well-being, productivity, and communications through effective acoustic design.

For specific product information, contact the Technical Department. For information, refer to the previous tables.

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
Tel +39 049 9003612
Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
www.quality-net.it

LEED BD+C V4 IEQ C 2 – LOW EMITTING MATERIAL

Intent: To reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment.

The products considered in this document comply with the requirements of this credit: the laboratory tests carried out and shown below show low levels of emissivity.

The tests performed are as follows:

- SILSONIC: Report Test 20518SILA which attests conformity with CDPH/ EHLB / Standard Method v1.2 (January 2017)

- MAPPYSIL CR 404: Report Test 1800154916 which attests conformity with CDPH/ EHLB / Standard Method v1.2 (January 2017)

- MAPPYFIBER® TREVIRA: Report Test 17518MFIBFP which attests conformity with CDPH/ EHLB / Standard Method v1.2 (January 2017) and Report test 17518MFIBFP121118 which attests conformity with: French VOC regulation (Classe A+); French CMR components; AgBB/ABG; Belgian Regulation; Emicode (EC1 Plus); Indoor Air Comfort®; Indoor Air Comfort GOLD®; EN717.1 (E1); BREEAM International; LEED V4 (outside U.S.); Breeam® Nor.

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
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5. FINAL SUMMARY

QualityNet believes that MAPPYITALIA can contribute to the LEED certification score in the credits indicated in the table below:

LEED V 2009 CREDIT	Points	Credit	Silsonic	MAPPYSIL CR400	MAPPYSIL CR404	Mappy Fiber Trevira
EA p 2	MANDATORY	Minimum energy performance	✓	✓	✓	✓
EA c 1	1 - 19	Optimize energy performance	✓	✓	✓	✓
MR c 2	1 - 2	Construction Waste Management	✓	✓	✓	✓
MR c 4	1 - 2	Recycled content	✓	✓	✓	✓
IEQ c9	1	Acoustic Performance	✓	✓	✓	✓

LEED V 4 CREDIT	Points	Credit	Silsonic	MAPPYSIL CR400	MAPPYSIL CR404	Mappy Fiber Trevira
EA p 2	MANDATORY	Minimum energy performance	✓	✓	✓	✓
EA c 2	1 - 18	Optimize energy performance	✓	✓	✓	✓
MR c 3	1 - 2	Building product disclosure and optimization - sourcing of raw materials	✓	✓	✓	✓
MR c 5	1 - 2	Construction and demolition waste management	✓	✓	✓	✓
IEQ c 2	1-3	Low Emitting Material	✓		✓	✓
IEQ c 9	1	Acoustic Performance	✓	✓	✓	✓

For more detailed information, please contact the technical department.

Although QualityNet considers that the product tested can contribute to a LEED certification, please note that only GBCI (Green Business Certification Inc.) can attribute scores and issue a LEED certificate. Remembering that LEED certifies building and not the materials, QualityNet not express any assurance on the achievement of the score.

Dott.ssa. Iris Visentin LEED AP BD&C

QualityNet srl
Via Aquileia, 56
35035 Mestrino (PD)
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Fax +39 049 9005725
Cod. Fisc. e P.IVA 04692840285
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