DIATHONITE®
THERMACTIVE.037

THE THERMAL SPRAY CORK-BASED COATING

THINK UNIQUE, BE DIFFERENT.

DIASEN®
GREEN BUILDING FUTURE

THE ENVIRONMENT IS LIFE, PROTECTION...AND HOME

Nature is our first supplier because, thanks to its generosity, we can blend and use the materials which we realise Diathonite Thermactive.0.37. It is the result of a merge between nature and technology. This result has generated a unique formula that it is able to improve domestic household. Diathonite Thermactive.037 guarantees equilibrium, healthiness, harmony and durability: it prevents from moulds and condensations, it reduces the temperature leap inconvenience, it guarantees protection from fire, it contains hard winter and heat summer, it repeats the incredible natural processes that are the essence of "building Mediterranean".

RAW MATERIALS

CORK

Diathonite Thermactive.037 feeds on cork and its magic: natural, renewable, versatile and sustainable, composed by 80% of air that makes it lightweight and breathable. Cork is the Diasen's primary item and, at the same time, Diathonite's core. It provides unique features that will guarantee efficient applications as well as excellent results. Due to its ability to avoid condensation formation, cork is not modified by humidity; it reduces noise propagation, guaranteeing acoustic insulation; it reduces the warmth exchange, and it will make the house cooler during summer and warmer during winter. Thanks to its nature of bark protection, it resists from fire, insects and moulds. Moreover, it provides extraordinary features as durability and healthiness into household environments. Without collecting electrical charges, cork avoids dust sediment that is the cause of always more allergies.

RAW MATERIALS

EXPANDED AMORPHOUS SILICIUM: THE NECESSARY DISORDER

It is a natural and abundant material. After oxygen, silicium is the more common element in nature; thanks to its amorphous shape, it does not create an ordinary reticulum but presents a chaotic structure that makes it free of shape. For this reason, it is possible to expand it by incorporating small spheres of air that are able to contrast the fire propagation. Amorphous silicium features, combined with its natural expansion, guarantee excellent insulation properties, stability over time and environmental sustainability.

PUMICE: HAPPY ANOMALY OF STRENGTH AND LIGTHNESS

Pumice is a vulcanic rock composed by almost 90% of air. Its porosity makes it the unique rock able to float and, at the same time, delicate. Due to this latter, pumice is used for cosmetics and beauty treatments. The strength and lightness combination provides to Diathonite Thermactive.037 resistance from external stress and dampness absorption. Its porosity guarantees lightness and thermal insulation as well as high fire resistance.

PERLITE: THE RESISTANT LIGHTNESS

Perlite is a positive effect for vulcan eruption dynamics. It is a very porous rock that blocks the water inside. Reducing in grains and heating up perlite, the water evaporates and expands the grains. The vitreous spheres created would concentrate important features such as: lightness, stability, chemical inertia, fire and parasitics resistance. Furthermore, thanks to its insulation power, it has an high breathability.

RAW MATERIALS

NATURAL HYDRAULIC LIME NHL5: THE ANCIENT WISDOM OF "BULDING MEDITERRANEAN"

It is obtained from natural marls and it hardens even into water. In this way, the product needs only one binder that is able to absorb and release dampness, carrying out a functional regulation for an household modern comfort. "Traditional" lime features make it eco-friendly and flexible for historical buildings. Consequently, it guarantees mechanical resistance, antibacterial capacity, breathability and fire resistance.

NATURAL FIBERS: THE DEPOSIT OF RENEWABLE RESOURCES

The cellulose natural fiber is obtained from recycled papers, after boron-salt treatment that guarantees resistance from fire and parasitics. Its great quality, which makes it optimal, contributes to shape an homogeneous composition that endure from retirement and micro-fissures. This quality guarantees stability over time, the possibility to recycle, elasticity and a total absence of toxic residuals.

DIATOMACEOUS EARTH: THE HIDDEN TREASURE OF THE OCEANS

It is the result of a fossil material caused by deep oceans sediments during milions of years. The ocean retirement has given back the possibility to reuse this enormous deposits. The diatomaceous earth has an high grade of porosity that allows to absorb liquids up to one time and half of its weight. This high porosity will maintain the powder completely wet and natural. Thus, it is lightness, absorbent, porous and eco-friendly.

THERMAL COMFORT NUMBERS

THERMAL CONDUCTIVITY

$\lambda = 0{,}037$ W/mK

Due to a good mixture of selected natural raw materials, the product reaches very high thermal insulation performance levels.

VAPOUR PERMEABILITY

$\mu = 3$

Walls are free to breath. Thanks to high permeability, indoor environment moisture is perfectly balanced and it avoids the spread of moulds and condensation.

THERMAL DIFFUSIVITY

$\alpha = 0{,}1\ m^2/Ms$

The low diffusivity level means high grade of heat insulation, thus higher comfort and energy savings for summer cooling.

DEHUMIDIFICATION CAPACITY

$1{,}00\ Kg/m^2h^{0,5}$

It contributes to the hygrometrical balancement of the various rooms inside the house, for confer the maximum housing well-being.

POROSITY

71%

High porosity structure with high air content grant guarantees good performances in terms of insulation and absorption of excessive moisture.

DENSITY

$\rho = 250 \pm 15\%\ kg/m^3$

The inert components confer lightness to the product, contributing to facilitate its transport and application.

ELASTICITY

$742\ N/mm^2$

More elastic than traditional plasters, it reduces the risk of cracks and fissures.

COMPRESSION RESISTANCE

$2{,}8\ N/mm^2$

High compression resistance that confers major consistency and stability to the wall.

FIRE REACTION

CLASS A1

The product has been classified class A1 in accordance to EN ISO 13501-1. Neither flames generation nor smoke emissions.

CERTIFICATIONS AND SUSTAINABILITY

Thermactive.037 performances find an item of value in the product certifications, released by institutions famous for their rigour, reliability and severity on give parameters.

Thermactive.037 is certified for the environmental sustainability, application and process properties that confirmes the uniqueness of the product. This latter is the result of a mixture of competitiveness, innovation and performances.

CERTIFICATIONS FOR SUSTAINABILITY

EPD ENVIRONMENTAL PRODUCT DECLARATION

The product respects procedures, properties and values of EDP's certification, that allow to identify and select eco-friendly products for a distinctive factor. Trials, severe procedures and inspections allow to measure and certify the product sustainability in all the life cycle phases.

LEED®

Leadership in Energy and Environmental Design

It is an American standard for eco-sustainability buildings. LEED recognises to Thermactive.037 the capacity to contribute to healthier spaces, better indoor air quality, energy savings and therefore an higher economical value of the real estate.

PERFORMANCE CERTIFICATIONS

CE

The properties and performance features of the product respect the European laws and are in compliance with building construction standards established in Europe. CE mark recognises to Thermactive.037 security requirements, quality and unicity that are fundamental for the customer satisfaction.

AVIS TECHNIQUE

It is a very severe French certification that is conferred only after several lab-tests, verifications and inspections. It is the maximum recognisement for reliability, performances and values for a chemical product for building construction. The product respects values and tests that are needed to obtain a certification.

DIATHONITE THERMACTIVE.037

WHY THERM?

Diathonite Thermactive.037 responds to people's need: reduce the thermal bother. The product strength is into its natural materials that guarantee a durable equilibrium. Indeed, they insulate from the hard winter and ensure pleasure from the heat summer. The thermal insulation challenge comes from the wisdom of the ancient wool-workers: indeed, what repairs from the cold can even repairs from the heat.

WHY ACTIVE?

Diathonite Thermactive.037 is Active because is a dynamic product that ensures, during time, climate variations of the solar year and incessant changement of moisture levels. It behaves as an hygrometric lung: it absorbs and sells vapour, avoiding the moisture deposit and the condense formation. The environment well-being borns even from material dynamism.

WHY .037?

.037 is the thermal conductivity value. This value is important because we are able to know what is the insulation thermal index, that is how much our environment is protect from cold and heat. Shorter is the lambda, bigger is the insulation capacity of the product. The 0.037 lambda is one of the lowest value of the plasters: natural is nice, comfortable and protective.

AIR

The materials used for Diathonite Thermactive.037 create high porosity conditions. Thanks to the air, these conditions are an added value of thermal insulation. Air has a very low predisposition to pass down the heat, with a thermal conductivity value that bring it at the top of insulated substances.

To use this property, it is needed to include the air in cells that fix the movement. The insulation is guaranteed by fixed air.

This is the reason why porous materials are needed. These materials include the air in several cells inside the product. The materials selected have cells that are intacts after the application. In this way, the air insulation function will result efficient and durable.

THE NEW LEGISLATION HORIZONS

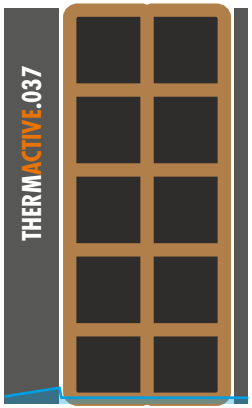
The European Union, for 2030, has established ambitious objectives on the continental economic development:

- **REDUCE EMISSION OF AT LEAST 40%, COMPARED TO 1990**
- **INCREASE ENERGY CONSUMING FROM RENEWABLE RESOURCES**
- **ENSURE ENERGY SAVINGS, COHERENT WITH EUROPEAN STRATEGY**
- **INCREASE EUROPEAN SAFETY, COMPETITIVENESS AND SUSTAINABILITY**

PARAMETER	CURRENT STATIONARY CALCULATION UNI TS 11300	FUTURE DYNAMIC MODE UNI EN ISO 52016-1:2018
INSULATION FROM COLD	★ ☆ ☆	★ ★ ★
INSULATION FROM HEAT	☆ ☆ ☆	★ ★ ★
HYGROMETRY	☆ ☆ ☆	★ ★ ★
THERMAL RESISTANCE (R)	★ ★ ☆	★ ★ ☆
INERTIA (KELI THERMICAL CAPACITY)	☆ ☆ ☆	★ ★ ★
SOLAR ABSORPTION COEFFICIENT (ALFA SOL)	☆ ☆ ☆	★ ★ ★
CLIMATIC HOUR DATA	☆ ☆ ☆	★ ★ ★

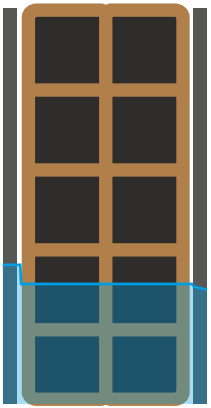
In this sense, it is forecasted to re-examine some European directives: it goes beyond the current half-stationary calculation introducing the dynamic hour calculation. The new legislation will enter into force in the next two years and it is more efficient for the calculation of the energy savings during summer.

DIATHONITE THERMACTIVE.037



UNSTABLE DAMP LEVEL THANKS TO BREATHABILITY SYSTEM

NONE INSULATED PART.



HIGH LEVEL OF DAMPNESS: CONDENSATION RISK, MATERIAL NOT BREATHABLE

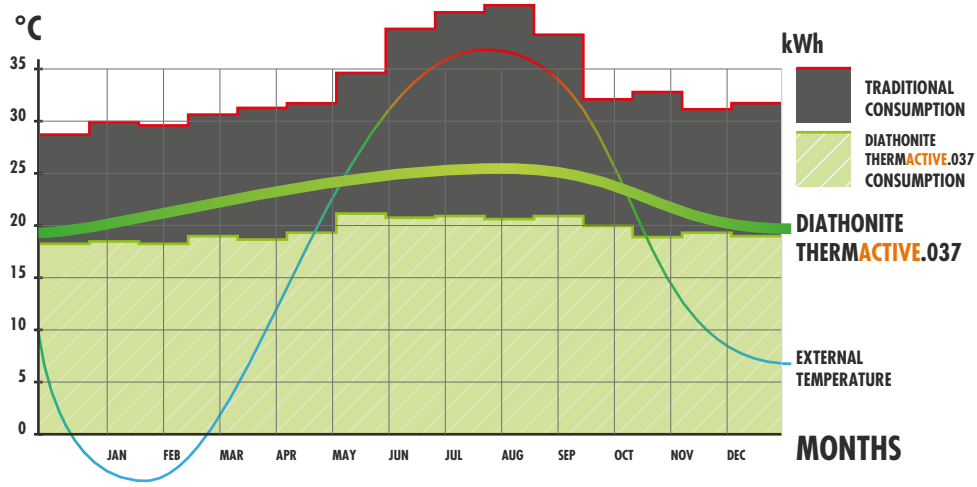
The wall sections show two levels of interstice condense. On the left, with Diathonite Thermactive.037, the level is lower than the right wall.

Because Diathonite Thermactive.037 does not deposit damp and, thanks to its breathable propierty, it expells outward the damp of the building.

THERMAL COMFORT WITH LOW CONSUME

"CALCULATIONS OF BULDING MEDITERRANEAN"

The limits of the current calculation mode will bring to substitute TS 11300 in favour of a dynamic hour model, thanks to EN ISO 52016 legislation "Building energy performances - Energy needs for cooling and heating, indoors temperatures and thermal sensible and latent loads"



In the Mediterranean climate, it occurs to protect the building from heat entrance. For this reason, a planning summer strategy should forecast an insulation of the coat, the study of the solar screen, analysis of inertial building answer as well as the exploitation of natural ventilation. More we go southward, more the energy consumptions increase during summer. Moreover, this new calculation highlights how some materials, instead of saving energy, increases the consumption.

THE GLOBAL OVERHEATING

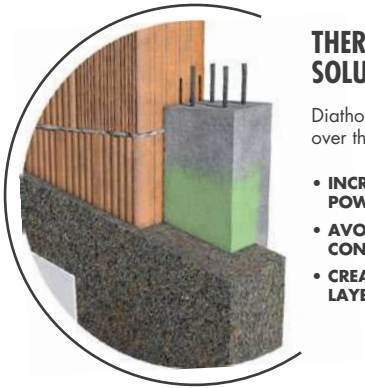
According to a New York Times' study, the future thermal levels will be superiors in Italy, compared with the current ones. In around half a century, in many Italy areas will be possible to have two/three months of temperatures higher than 32 degrees. Therefore, the protection from high temperatures will be the great challenge of the building sector and, at the same time, a good test for "building Mediterranean" systems and products.

SYSTEMS

NEW BUILDINGS: THERMAL COATING INSULATION

The external shell system guarantees high values of thermal insulation and a major saving compared to armed concrete.

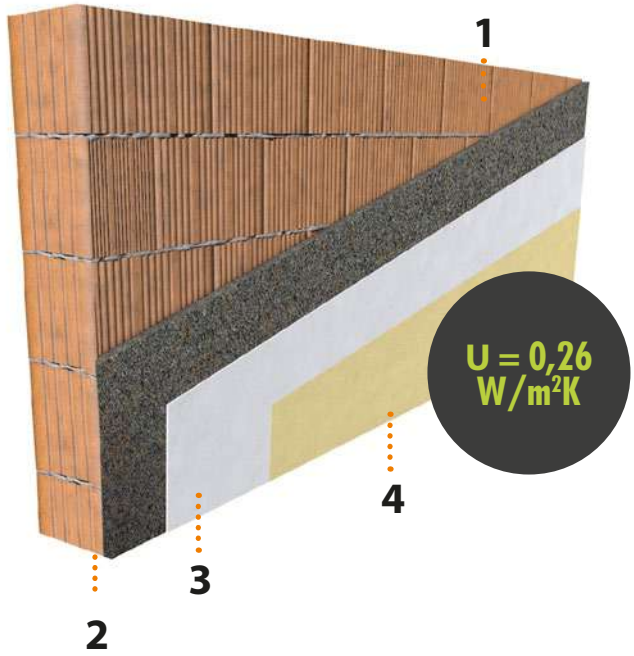
Differently from traditional dry systems, Diathonite Thermactive.037 versatility allows to intervene both inside and outside of the masonry. Finally, it increases the saving of the system and its well-being.



THERMAL BRIDGE SOLUTION

Diathonite Thermactive0.37, applied over thermal bridge:

- **INCREASES THE INSULATION POWER IN THE DISPERSION POINT**
- **AVOIDS MOULDS AND CONDENSATIONS FORMATION**
- **CREATES A CONSTANT ISOLATED LAYER**



1 Bricks wall 38cm

2 DIATHONITE THERMACTIVE.037
Thermal spray coat 3cm

3 ARGATHERM
Thermal finishing smoother

4 DECORK ALFAREFLEX 0.2
Cork-based finishing

THERMACTIVE.037 STRENGTH POINTS ON NEW BUILDING SYSTEMS

FAST AND EFFICIENT BUILDING SYSTEM

It is possible to realize in three phases with easy layers, without discontinuity and thermal bridge. Furthermore, it eliminates the difficulties during the fixing phases: less work but more savings.

TRADITION AND THERMAL COMFORT

It avoids thermal dispersions during winter and the overheating during summer; all of these, maintaining energy saving and indoor well-being. It is optimous in mediterranean environments because it establishes thermal and climate surges.

DURATION

It guarantees a perfect wall and building grip towards atmospheric agents: resisting from thermal surges it reduces material enlargement and, at the same time, it increases the duration with a consequent savings in conservation costs.

RESISTENCY

It confers to the wall an high compression resistance that guarantees stability. High elasticity and continuity in the application avoid the formation of cracks and fissures.

AVOIDS OF MOULDS AND DAMPNESS

It is dehumidified, breathable and permeable thanks to the material porosity that avoids dampness stagnation and the formation of moulds and condensations in correspondence of thermal bridge and exposed walls.

COMPLIANT TO GREEN BUILDING

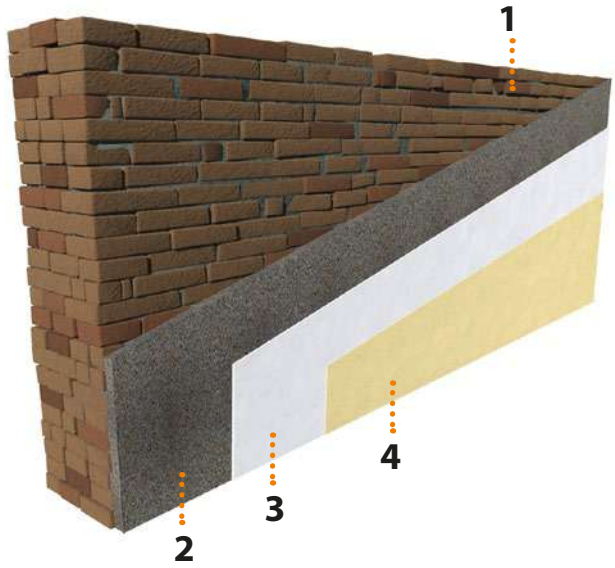
As an ecological, natural and not polluted product, it is in compliance with green building principles for all the entire life cycle: thus, from production to removal.




SYSTEMS

MIXED MASONRY AND OLD PLASTERS

The refurbishment of a facade, with a thermal insulation, increases the building value. The use versatility, lightness, high breathability, renovation capacities, compression resistance and insulation properties make Diathonite Thermactive.037 ideal for energetic and historical green building restoration.



OLD PLASTER RESTORATIONS

Diathonite Thermactive.037 can be applied as a thermal coat over existent plasters that are in a good conservative state.

1 Existing plaster

2 DIATHONITE THERMACTIVE.037
Thermal spray coat

3 ARGATHERM
Thermal finishing smoother

4 DECORK ALFAREFLEX 0.2
Cork-based finishing

1 Existing wall: masonry / brick / stone

2 DIATHONITE THERMACTIVE.037
Thermal spray coat

3 ARGATHERM
Thermal finishing smoother

4 DECORK ALFAREFLEX 0.2
Cork-based finishing

THERMACTIVE.037 STRENGTH POINTS FOR REFURBISHMENT

LIGHTNESS AND RESISTANCE

It is four times lighter than a traditional plaster, and guarantees an adequate compression resistance as well as the avoiding of crack problems.

GREEN BUILDING RESTORATION

The formulation is based on eco-friendly materials such as cork and lime that allow to use Thermactive in historical renovations, always respecting the sustainability standards.

FACADE PROTECTION

It covers the building in a continuous and uniform way. Moreover, it stops the facade erosion. The use of the product avoids water infiltration and condensation.

WALL REGULARISATION

Regulates and uniforms facades. In addition, it avoids interventions before panel applications. Its nature of being a spray thermal coat gives it the possibility to adhere over all the surfaces.

RENOVATION OF DAMPNESS AND HIGH HYGROMETRY

The porous structure allows to eliminate rising dampness. Breathability and the capacity to absorb and expell vapour avoid superficial dampness, moulds and condensation.

EFFICIENT SYSTEM - LESS BUILDING COSTS

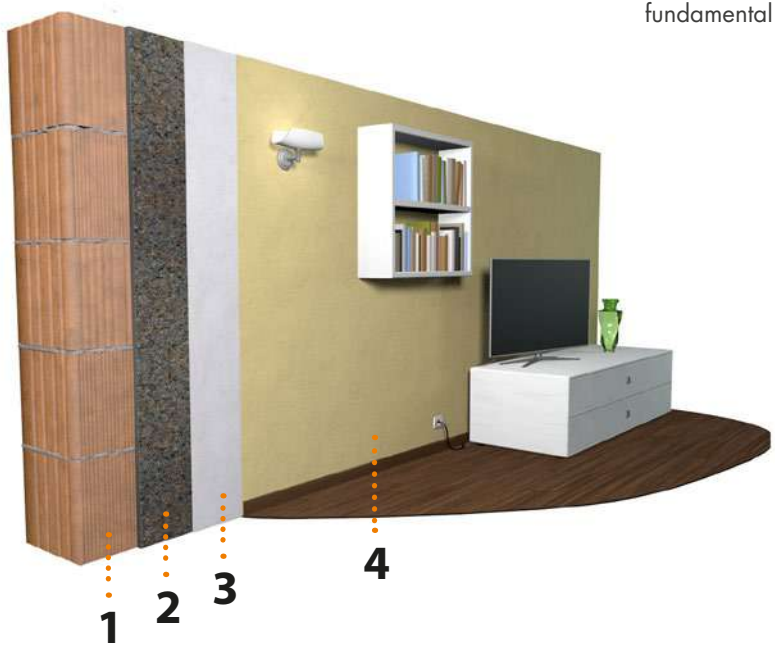
It assures a fast and efficient application onto existing masonries, eliminating construction and labour costs. If applied on old plasters, it avoids interventions on thresholds and windows.




INTERNAL AREAS

Diathonite Thermactive.037 is suitable for internal insulation techniques. Internal intervention is often the unique solution: for example, in case of stone masonries, bricks or historical buildings that are obliged to remain as the original aspect.

The nature of the spray thermal coat allows its application even to vaults and superficial curves, fundamental elements in the restoration universe.



1 Existing wall: masonry / brick / stone

2 DIATHONITE THERMACTIVE.037
Spray thermal coat

3 ARGATHERM
Thermal finishing smoother

4 DIASEN'S COLOURED FINISHING

DIATHONITE THERMACTIVE.037 STRENGTH POINTS FOR INTERNAL AREAS

NO MOULDS AND CONDENSATION

Thermactive.037 is highly breathable and thermal: for this, it avoids moulds and condensation, guaranting an household optimal comfort and a good air quality.

HYGROMETRIC LUNG AND DAMPNESS RESTORATION

The high breathability and the capacity to absorb and expel vapour avoid condensations, regulating thermal-hygrometric equilibrium. Dehumidification capacities allow a fast dampness disposal.

WARM WALL

Differently from concrete plasters, Diathonite Thermactive.037 system guarantees a warm tactile perception. The warm wall gives a sensation of well-being that is a significant part of household thermal comfort.

ACOUSTIC WALL

Thanks to its cells that characterised the structure, it presents sound absorbtion coefficients superior than traditional plasters. Moreover, it succeeds to well absorb sound waves and thus, improving wall acoustic insulation.

USABLE WALL

The compression resistance is quite similar to that of a traditional plaster. For this reason, it is possible to fix objects onto wall, such as frames, tv, shelves, etc.

A SAVING-MONEY SYSTEM

The system avoids the usage of inner tubes, with the consequence of gain thickness and reduce costs compared to classic dry systems.




ARGATHERM

The thermal insulation should be thought and realised as a system. For this, it is believed to be optimal only if the intervention is realised combining highly thermal and breathable materials that avoid climate surges and condensation. To maximise thermal insulation and energy saving, Diasen has developed Argatherm, a lime-based smoother, mineral inerts and natural micro-fibers. If applied with thermal coats of Diathonite line and thermal painting, it creates a breathable system with an high insulation that push to excellent levels the thermal and household comfort of spaces in question.

ENERGY SAVINGS

The conductivity value avoids thermal dispersions in favour of energy savings and thermal comfort.

BREATHABILITY

It does not change the breathability of the thermal coat and of the wall, avoiding interstitial condensation formation.

NO MOULDS AND CONDENSATIONS

Breathability and anti-bacterial lime prevent and eliminate moulds and condensations.

THERMAL CONDUCTIVITY

$\lambda = 0{,}128$ W/mK

The material raw mixture block the air, guaranting lightness and resistance.

VAPOUR PERMEABILITY

$\mu = 15$

The relationship between inerts and binders makes the product lightness and lets the wall breathe.

COMPRESSION RESISTANCE

≥ 15 N/mm²

The high resistance confers to the system: compactness, protection and durability.




DECORK ALFAREFLEX 0.2

The thermal insulation system, of energy savings and household comfort is based on the combination between Diathonite and Argatherm. At the end, the system should be completed with Decork Alfareflex 0.2 finishing, a cork-based white painting that is also formulated with water-based resins. These latters offers a relevant feature to the system: 80% of index solar reflection. Thus, technical product features assure an high level of thermal insulation, energy savings and thermal building comfort, particularly significant during summer season. Moreover, Decork Alfareflex 0.2 guarantees elasticity, waterproofing and resistance from atmospheric agents even in sea-cities, which have dried salt in the air.

ENERGY SAVINGS

The conductivity, combined with the capacity to reflect solar rays, avoid overloaded heat in favour of thermal comfort.

HYGROMETRY

The product contributes to hygrometrical regulation of the environments, avoiding moulds and condensations.

ELASTICITY

The combination between elastic resins and cork donates an high elasticity and crack resistance to the product.

THERMAL CONDUCTIVITY

λ = 0,086 W/mK

The raw material mixture blocks the air, guaranting lightness and resistance.

SRI (SOLAR REFLECTANCE INDEX)

80%

The high reflectance index favours structure and thermal insulation savings.

WATER PERMEABILITY

W2 Category

Permeability value balances wall dampness, avoiding moulds and condensations.

SUCCESFUL CASES
DOMUS 2020 - HOUSEHOLD - FORMIGINE - ITALY

The household of the future will be linked to a wide concept of comfort and well-being. The code word is NZEB (Nearly Zero Energy Building): efficient environments, eco-friendly and with energy consumption closed to zero. This way has been adopted by the European Union. From next year, new public building must have NZEB criterias while, from 2021, all the other buildings.

Domus 2020 is an NZEB household, built few kilometres far from Modena; it is an experimental and anticipatory planning that has guaranteed, thanks to Diathonite Thermactive.037, an yearly energetical consumption of 2 € per square. Moreover, it ensures a 20% saving compared to a wood building. Combining technology and values, it has been possible to reply to future challenges. This reply has taken in consideration excellent permeability performances, thermal and acoustic insulation, fire resistance and the respect of seismic criterias.

NZEB HOUSE
CONSUMPTION
2 €/M²/YEAR

SUCCESFUL CASES
HOUSEHOLD - MEDOLLA - ITALY

Medolla's house, situated in Modena's province, has been a succesful experience. It is the result of an accurate and precise project, which has taken in consideration the design and the usage of excellent materials that are able to guarantee excellent technical performances.

Since the first phases, the use of Diathonite Thermactive.037 has allowed to offer responses to seismic security needs and thermal insulation, that were expected by the project. The responses were inserted to a frame set which its object was to obtain a building with a great household comfort for both thermal level and air quality. Obviously, this project has followed the green building criterias such as the use of eco-friendly materials with low emission levels.





SUCCESFUL CASES
FRANCE

The succesful cases in France are various. For this reason, it is not good to resume all the cases in one because the high quality performances of the product have been seen in a good part of the French country.

In this context, it is fundamental to comprehend the role of private buildings. It is possible to see, at first impact, the value of the result with "before" and "after" images. Following this gallery, it is possible to perceive clearly the Diathonite's result, combining thermal insulation, energy efficiency and estethical criterias.

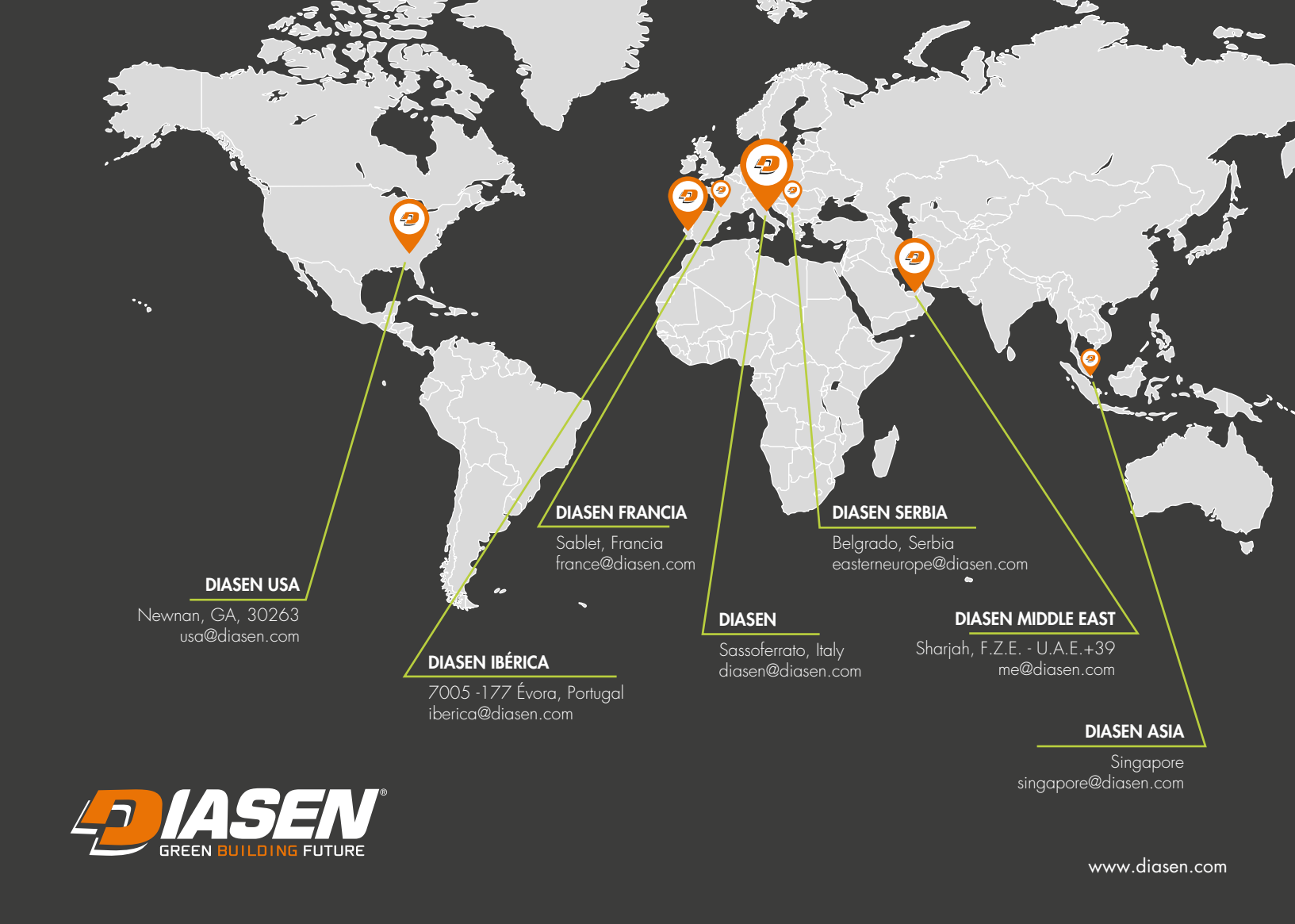





SUCCESFUL CASES
RESIDENTIAL BUILDING "BELGRADE WATERFRONT" - BELGRADE - SERBIA

"The Belgrade Waterfront" is an huge and suggestive residential building that is located in the city centre. The project represents a flagship of the Belgrade's city planning development. In this context, Diathonite Thermactive.037 has guaranteed an high quality application in the flat partition walls.

Thanks to the Diathonite Thermactive.037, it is possibile to work with low thickness. The low thickness allows to gain, in every flat, square meters. This gain has given the opportunity to realise wide and comfortable indoor areas. Moreover, the internal application has allowed to reach an excellent thermal comfort, excellent acoustic insulation as well as enjoyable smooth walls.



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GREEN BUILDING FUTURE

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