

Specific properties of the THERMOSHIELD NANO PLATINUM INTERIOR / FACADE ceramic nano plaster

The THERMOSHIELD NANO PLATINUM INTERIOR / FACADE product is composed of natural thermal fillers and high-quality resins; it effectively solves the problem of thermal insulation.

When applied to concrete columns and lintels it eliminates the thermal bridge, whether it is used inside or outside residential buildings, thereby representing an alternative to a traditional thermal envelope.

Particularly important, with regard to the growing requirements for biocompatibility and energy efficiency, is its extraordinary reflective character, which prevents the formation of condensation and the subsequent growth of mould, thereby optimising the energy efficiency of the building.

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE – PROPERTIES AND FUNCTIONS:

1/ Thermal insulating properties

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE, applied in a thin layer of only 3–4 mm, achieves an extraordinary thermal insulating capacity comparable to a conventional thermal insulant with a thickness of 6–7 cm.

Laboratory tests carried out on a steel plate (thickness 3 mm), treated on one side with the THERMOSHIELD NANO PLATINUM INTERIOR / FACADE product (layer of 1 mm) and exposed to a temperature of 155 °C, show that a temperature of 18 °C was measured on the unprotected side. This means that the 1 mm layer provided a thermal barrier of 137 °C.

The test result proves that THERMOSHIELD NANO PLATINUM INTERIOR / FACADE not only retains heat, but also reflects it. This means that in any space where the walls are treated with this material, the temperature inside remains progressively lower without it being necessary to use traditional insulation systems.

This property has also been demonstrated in cases of extreme humidity, without a traditional insulation system, including walls with a significant presence of mould, which disappeared completely after the application of a few millimetres of the product.

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE is an ideal solution for the treatment of thermal bridges and cold surfaces – both on walls and on ceilings.

2/ Water-repellent properties

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE does not absorb water, not even in direct contact. It does not have waterproofing properties, but it has a special surface structure which, thanks to the tension in the nanostructure, prevents the passage of water and at the same time increases the thermal resistance. It is therefore also suitable as a preventive measure for spaces where there is a probability of increased humidity in the future and of the possible occurrence of mould.

Important notice: before the application of THERMOSHIELD NANO PLATINUM INTERIOR / FACADE, the surface must be completely dry and cohesive.

The THERMOSHIELD NANO PLATINUM INTERIOR / FACADE layer exhibits high vapour impermeability with respect to moisture from both the external and the internal environment. Water bound in the building material is not able to penetrate through the surface applied with the THERMOSHIELD NANO PLATINUM INTERIOR / FACADE thermal plaster. It gradually evaporates by diffusion towards the interior or the exterior, depending on the gradient of the partial pressures of water vapour.

This property brings the following effects:

- An increase in the thermal resistance of the structure thanks to the elimination of moisture, which would otherwise reduce the insulating capacity of the masonry
- Stabilisation of the moisture regime of the structure, thereby reducing the risk of condensation and of biological degradation (moulds, fungi)
- Maintaining the dry state of the surface, which significantly contributes to the long-term energy efficiency of the building

In exterior application, THERMOSHIELD NANO PLATINUM INTERIOR / FACADE can also be used as protection against smaller floods and inundations.

3/ Reflective technology of thermal protection

In addition to its excellent insulating properties, THERMOSHIELD NANO PLATINUM INTERIOR / FACADE also offers the ability to reflect thermal radiation, thereby effectively preventing both heat losses in the winter period and excessive overheating of building structures in the summer months.

Thanks to its high reflectivity it reduces the flow of thermal energy through structural elements, and thus contributes to a significant increase in the energy efficiency of the building. When applied to façades or interior soffits it limits the direct heating of structures by solar radiation and stabilises internal temperature conditions.

ENERGY SAVINGS, COMFORT AND A HEALTHY INDOOR ENVIRONMENT:

Thermal insulation, energy savings, thermal well-being and a healthy microclimate – these are the basic principles of modern construction and renovation. But how to achieve these advantages effectively?

One of the options is the use of the thin-layer reflective system THERMOSHIELD NANO PLATINUM INTERIOR / FACADE, which, thanks to its unique composition based on natural fillers and advanced resins:

- effectively prevents heat losses
- reduces the condensation of water vapour
- increases the comfort of the environment thanks to the temperature stability of surfaces

Especially in the winter months, thanks to the effective reflection of heat, the risk of moisture condensation on cold walls is significantly reduced, which is a frequent cause of structural defects of buildings and of the subsequent occurrence of mould and health problems of the occupants.

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE exhibits an extremely low thermal conductivity coefficient ($\lambda < 0.049 \text{ W/mK}$) at a minimum thickness of the applied layer. Nevertheless, it provides an exceptionally effective thermal barrier.

Where this plaster will be of benefit to you:

- In places where traditional insulation cannot be used (e.g. heritage-protected buildings, narrow spaces, internal surfaces)
- In buildings with frequent heat losses through building structures, frames, window reveals, etc.
- Reduction of the costs of heating and cooling
- An increase in thermal comfort in the interior
- Protection of building structures against thermal stress and the related volumetric strain
- Limitation of the formation of microcracks caused by thermal expansion
- Reduction of energy consumption and CO₂ emissions
- Support for sustainable construction – suitable for ecological certification systems (e.g. LEED, CAM)

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE regulates heat flows diffusively through the material. Thanks to the high permeability to water vapour, moisture from the structure gradually evaporates into the internal environment, whereby the moisture balance is restored and the risk of degradation of the structure is reduced.

Health benefits:

- stabilisation of the internal microclimate,
- a reduction in the occurrence of moulds, mites and other allergens,
- a positive impact on the quality of the air in the interior, especially for allergy sufferers and persons sensitive to changes in the environment.

USE IN THE INTERIOR:

The product is supplied as a homogeneous paste of cream colour, in 12 kg buckets, in a smooth or textured finish.

Before the application of THERMOSHIELD NANO PLATINUM INTERIOR / FACADE it is necessary to verify that the surface is completely dry and cohesive.

Procedure:

- On masonry or concrete structures it is recommended first to apply a deep-penetrating priming coat and subsequently to spread THERMOSHIELD NANO PLATINUM INTERIOR / FACADE
- On structures made of plasterboard (SDK) or impregnated wood, THERMOSHIELD NANO PLATINUM INTERIOR / FACADE can be spread directly
- On steel structures the surface must first be treated with a base coat and, after it has dried, THERMOSHIELD NANO PLATINUM INTERIOR / FACADE is subsequently spread

Recommendation for enhancing the effect: After the plaster has dried, we recommend applying the THERMOSHIELD REFLEX PREMIUM thermal insulating coating. This will significantly enhance the thermal insulating and anti-mould properties of the treated wall or ceiling.

USE IN THE EXTERIOR

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE can be applied and spread onto ordinary external plasters (e.g. lime, lime-cement, etc.), in 1–3 layers. The layers are spread gradually, only after the previous layer has thoroughly dried. Before the application of THERMOSHIELD NANO PLATINUM INTERIOR / FACADE, verify that the substrate is dry, clean and cohesive, and treat it with a deep-penetrating primer.

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE can be used either as an additional treatment of thermally insulated surfaces, or as a replacement for a thin-layer final render, with the advantage of improving the surface thermal well-being and the vapour permeability of these thermally insulated structures.

Recommendation for enhancing the effect: After the plaster has dried, we recommend applying the THERMOSHIELD REFLEX PREMIUM thermal insulating coating. This will significantly enhance the thermal insulating and anti-mould properties of the treated wall or ceiling.

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE – A MODERN ALTERNATIVE TO TRADITIONAL INSULATION:

THERMOSHIELD NANO PLATINUM INTERIOR / FACADE represents a highly effective and gentle alternative to classic insulating materials. It does not interrupt the vapour permeability of the masonry, preserves its diffusion capacity, and at the same time stabilises the internal temperature in the living space.

It is a product which is:

- non-invasive,
- hypoallergenic,
- highly effective even at a minimum layer thickness.

By applying only 3–4 mm, a reduction of heat losses of up to 50% is achieved, while the natural permeability of the structure to water vapour and air humidity is preserved.

Advantages compared with traditional insulation:

- after application the structure remains vapour-permeable
- prevents the formation of mould and the condensation of moisture on building structures
- achieves a thermal conductivity coefficient of $\lambda \leq 0.049 \text{ W/mK}$, which corresponds to the values of classic insulants
- does not affect the architecture and the usable space,
- easy application
- does not contain formaldehyde
- is ideal for healthy living and for sensitive persons (children, allergy sufferers, seniors)

Thermal comfort and healthy microclimate:

- thermal comfort without overheating,
- protection against the condensation of water vapour,
- the limitation of thermal bridges,
- the natural breathing of the structure,
- and all this without the necessity of covering spaces with insulating boards or mineral layers.

Compared with common polymer insulation materials (e.g. expanded polystyrene), which age, deform and lose their insulating properties over time, THERMOSHIELD NANO PLATINUM INTERIOR / FACADE remains stable, contains no harmful chemical substances and does not require special protection against UV radiation.

In conclusion it can be said that THERMOSHIELD NANO PLATINUM INTERIOR / FACADE brings an effective and aesthetically unobtrusive solution which makes it possible to significantly improve the thermal protection of buildings without the necessity of complicated interventions, without the loss of living area and without limiting utility and aesthetic comfort.

TECHNICAL INFORMATION:

Property	Value / Description
Thermal conductivity (λ)	Tested in the laboratory – value: 0.049 W/m·K. After drying: 0.039 W/m·K
Diffusion resistance (μ)	$\mu = 400$
Water vapour diffusion resistance	$S_d = 0.04 \text{ m}$
Reaction to fire (EN 13501-1)	Euroclass E
Dry bulk density	approx. 0.7 g/cm ³ $\pm$ 10%
Density of the wet mixture	approx. 1.75 kg/l $\pm$ 10%
Adhesion (UNI EN 1542)	$\geq 0.5 \text{ MPa}$ (to a concrete substrate)
Water absorption index (UNI EN 1062-3)	W2 – medium absorption
pH	7–8
Drying time between layers	min. 24 hours at 18 °C
Appearance	Mass of paste consistency, natural white colour
Application	Painter's spatula / notched trowel (comb)