

AFONTERMO®

Anti-condensation, reflective insulating coating



AFONTERMO® is a ready-to-use product made of natural insulating aggregates and resins, which cleverly solves the problem of insulation in concrete pillars and metal pieces, countering the effects of thermal bridges and offering an alternative to traditional thermal cladding. In the light of an increased demand for biocompatibility and low energy consumption, this product has outstanding insulating performance that prevents condensation and mould forming and optimises the energy performance of buildings.

AFONTERMO™: **SPECIFICATIONS AND FEATURES**

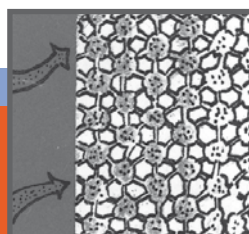
AFONTERMO®, if applied in a thin layer, no more than 1 mm thick, provides an extraordinarily high insulating power; lab tests found that, after treating a steel plate (3 mm thick) with **AFONTERMO®**

**AN EXTRA-THIN
ANTI-CONDENSATION
REFLECTIVE INSULATING
COATING THAT ADDS TO THE
WALLS OF YOUR HOME
THE INSULATION IT NEEDS.
A FEW MMs THICK COATING
DOES THE WORK OF
6-7 CMs OF INSULATION.**

(1 mm thick) on one side and exposing it to a temperature of 155°C, the temperature measured on the opposite untreated side was just 18°C; this means that a 1mm thick layer of this product can filter out as many as 137° degrees.

The result of this test shows that **AFONTERMO®** does not absorb heat but reflects it. This means that, by applying the product on the interior walls, the heat will not be absorbed but will be reflected, maintaining a constant temperature even when the heating system is kept low.

Extraordinary results have been achieved in extreme cases just by applying a few millimetres of this product on walls that had no insulation at all or with extensive mould growth.



METROGREEN

AFONTERMO®

Areas of application

Works have been carried out all over Italy: from Lombardy to Emilia Romagna, from Valle d'Aosta to Sicily, from Tuscany to Sardinia, from Piedmont to Friuli Venezia Giulia. Lots of people write to us to thank us for giving them an excellent product that has helped them to get rid of damp, of unpleasant musty smells, and has solved their insulation problems. It has actually been found that a 3-4 mm thick layer of this product cools the temperature down by 25-30° C in summer; and, if you set the thermostat at 15-16° C in winter, you can have 18-19° C in your home all the time.

In the light of such results, AFONTERMO® is the perfect insulation solution to solve problems such as thermal bridges, surface or interstitial condensation, energy consumption.

Another extraordinary feature of **AFONTERMO®** is that this permeable material can become impermeable when needed. There was the case of a house in Modena where some of the walls had been treated with **AFONTERMO®**; the Panaro river broke its banks and flooded the entire area, the water rising up to one metre high in the houses. In the apartment treated with **AFONTERMO®**, the treated walls did not get wet at all, while the untreated walls were ruined.

Why this? Certainly not because **AFONTERMO®** is waterproof because there is nothing in its components that makes it so, there is lots of micronized air instead; it is precisely the air that makes the layer impassable, the same air that gives it its insulating properties. Why cannot water seep through the layer of **AFONTERMO®**

applied on the walls? Because all the air would have to be expelled to let the water in, but this cannot happen because there is a backing, the wall, underneath.

AFONTERMO® should be applied on to walls to protect them from flooding.

AREAS OF APPLICATION

As well as in the building industry, this product may also be applied to heat exchangers, water pipes, tanks, oxygen and heat lines, refrigerating units.

It perfectly adheres to any surface and insulates when the temperature reaches + 176°C; this product is also effective on hot surfaces up to + 280°C. It is heat resistant up to +600 °C.



AFONTERMO® and Reflectance

REFLECTANCE

Reflectance may be defined as the non-absorption of light and heat.

There are quite a few materials that have such reflective property: there are naturally reflective elements, such as the colour white: on islands, which are heated by sunshine in summer, buildings are often painted white. Or alumina, which is brushed or sprayed on the facings of buildings to reflect a small proportion of sunrays; but such materials do not last long. Tinfoil too is an extraordinarily reflective material but it is too expensive and impractical to use: you cannot coat a facing in tinfoil because it would easily break up; heavy rain, hail, even birds would knock out such a coating; in addition, none of such materials have insulating properties.

AFONTERMO®, if applied indoors, will reflect and hold in 80% of the heat from the radiators; if applied outdoors, will reflect and reject the heat of the summer sunshine

Based on experiences in the use of **AFONTERMO®** on exterior concrete block facings (protected by black bituminous sheaths and exposed to sunshine at a 135 degree angle), the following temperatures were measured:

- highest on the outside of the untreated facing: 52°C;
- highest on the outside of the treated facing: 25°C;

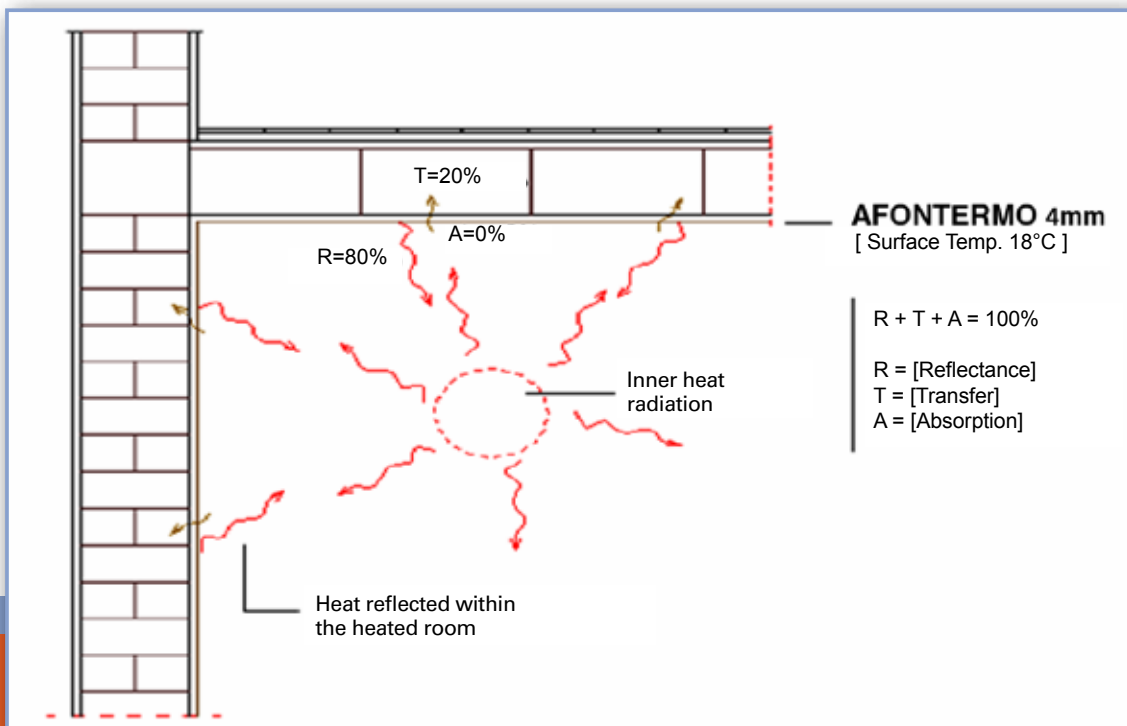
Direct advantages of using a reflective **AFONTERMO®** coating:

- Reduces the cost of insulation in summer;
- Increases the comfort of your home (it feels cooler in the summer);
- Less structural stress;
- Less chemical-physical deterioration of the insulating materials.

Indirect advantages of using a reflective

AFONTERMO® coating:

- Less overheating in urban areas (a sort of 'heat island');
- Less pollution from the chemical-physical deterioration of materials;
- Fewer carbon emissions.



AFONTERMO® Insulation

LOW ENERGY CONSUMPTION AND HEALTHY ENVIRONMENT

Insulation, low energy consumption, a nice feeling, a healthy environment are key principles that must be borne in mind in any new building or renovation project.

But which products actually meet all these requirements? Certainly not the closed-cell impermeable insulation coats, as not only they are so thick that take up too much space, and space is at a premium in a house, they can also ruin the exterior walls and, with it, the comfort of the house, as a result of an incontrollable onset of condensation between the insulation layer and the wall itself. Another example of a botched-up job is using steam-resistant plaster mixed with resins, which slow down the setting process to make it easier to work with. This means that the steam generated by the household can only escape through the doors and windows, while it should normally be let out through the walls. But, if you apply a layer of non-breathing mortar on the interior walls and a thick layer (10-12 cm) of closed-cell insulating material, also known as coat, on the outer walls, the wall will no longer breathe at all, while breathability is essential to keep walls healthy.

Actually, since the Eighties, the insulation

systems used in residential homes have been a failure; they have actually been more harmful than beneficial, firstly because of the condensation formed by the gradient between the two temperatures (insulating layer and wall); secondly, because of the thermal bridges that frustrate any energy-saving attempt; thirdly, because the impassable insulating layer applied to the wall causes mould to grow and damages the furniture

The long-term consequences of all this have been: serious damage to buildings, energy consumption and heavy environmental impact, human health risks (eye, skin and airway irritations, increased allergies).

AFONTERMO® is an excellent alternative to traditional solutions, making the walls more breathable and maintaining constant temperatures in the house, aware of the need to live in a healthy environment, in the attempt to keep energy consumption to a minimum in the interest of people and the ecosystem. The insulation provided by **AFONTERMO®** gives the walls back their health and gives the house back its space, which would otherwise be taken up by the bulky, harmful traditional insulating coats.

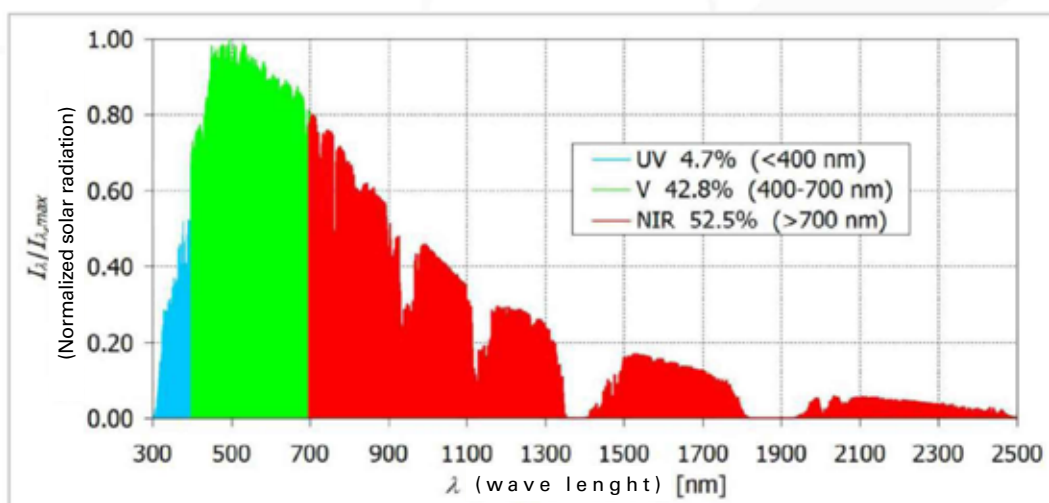


Figura 1.1 Spettro normalizzato della radiazione solare alle superfici terrestri (dati dall'ASTM Standard G173). / Figure 1.1 Normalized solar radiation spectrum at the Earth's surface (data from ASTM Standard G173).

AFONTERMO®

Nanocappotto

AFONTERMO® is the best alternative to traditional insulation coatings, it radically revolutionizes thermal insulation systems by facilitating wall's breathability and simultaneously maintaining the internal room temperature constant.

AFONTERMO® is a permeable and hypoallergenic product, it's not invasive, in fact you just need to apply a very thin layer, about 4 mm, to obtain up to 90% heat insulation and energy saving.

AFONTERMO® provides incomparable living comfort, while the traditional thermal insulation coating, by not allowing the walls to breathe, caging the buildings and sealing them off in an unnatural way.

The use of polymer panels is undoubtedly responsible, over the years, of performance deterioration, this does not occur using a natural product such as **AFONTERMO®**.

Furthermore, the process used to install the traditional thermal coating, implies extra costs like scaffoldings and municipal authorizations, it isn't compatible with bio-architecture because made with chemically derived materials, its pa-

nels in time warp with consequent alteration of the buildings facades.

Contrariwise, the use of **AFONTERMO®** gives the following advantages:

- It does not alter the breathability of the wall because it has a very low vapor permeability value $\mu=5$
- It prevents or eliminates condensation and mold
- It helps you to save lot's of energy, its equivalent thermal conductivity: $(\lambda_{eq}) 0,001$. **W7mK, is 100 times lower respect to traditional thermal coating systems.**
- It 's compatible with bio-architecture constructing methods.
- It can also be applied only on the inside walls, avoiding extra costs and time loss for scaffolding.

The insulation that we obtain with **AFONTERMO®**, in a simple and economical way, returns health to the wall and increases environment space.



AFONTERMO®

Work done



External facade of a house near Pisa



External facade of a school at Paderno Dugnano (MI)



External facade of a building at Navacchio (PI)



External facade of a building at Imperia



External facade of a house at Stroppiana (VC)

AFONTERMO®

How to apply

HOW TO APPLY

The product is white and looks like a soft paste, it comes in 14 liter buckets. **AFONTERMO®** is available as type A, the first layer, or type B the finishing layer available in various grain sizes.


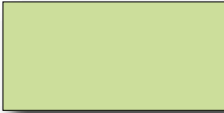
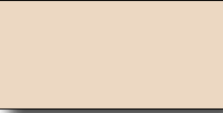
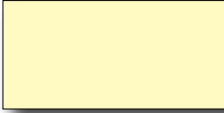


To insulate concrete or metal beams and pillars (metal needs to be treated with a rust-inhibiting primer first), first apply, using a smooth-edged trowel, 3 mm layer of **AFONTERMO®** type A, then, when the surface is perfectly dry, follow with another 3mm of **AFONTERMO®** type B.

To insulate interior walls exposed to condensation or a high concentration of mould, wash the mould away from the inside walls, only when the surface is dry, apply a 3mm layer of **AFONTERMO®** type A; wait at least 48 hours for the wall to dry, then apply Type B. Wait another 48 hours for the wall to dry, then smooth the surface with sandpaper, at this point you can paint the wall using **PITTURA TERMOFOTOCATALITICA**.

HOW TO APPLY THE INSULATING COAT

On a new, standard lime plaster wall, indoor or outdoor, apply with a smooth edged trowel one layer (3mm) of **AFONTERMO®** type A; when dry, apply the second layer; **AFONTERMO®** type B. When the surface is perfectly dry, smooth it out with some fine sandpaper. Now you can paint the wall using **PITTURA TERMOFOTOCATALITICA**. Eventual Coloration of the paint involves a reduction of the reflectance values that vary according to the colors.

Infrared reflectance values of the following colors *

| | | | |
|---|--|--|--|
|  | White 90,32% |  | Green 79,59% <i>reflectance reduced of 10,73%</i> |
|  | Light brown 58,57% <i>reflectance reduced of 31,75%</i> |  | Yellow 82,64% <i>reflectance reduced of 7,68%</i> |
|  | Dark Brown 35,89% <i>reflectance reduced of 54,43%</i> |  | Red 78,91% <i>reflectance reduced of 11,41%</i> |

*The colors used are used only for illustrative purposes only.

AFONTERMO®

Technical data sheet



TECHNICAL DATA SHEET

| | |
|--|---|
| Thermal conductivity | Applied inside: $\lambda = 0,001 \text{ W/mK}$ - Applied to the exterior: $\lambda_{eq} = 0,003 \text{ W/mk}$ |
| Reflectance | R = 80% |
| Vapour resistance | $\mu = >9.1$ |
| Specific heat | 1493 J/KgK (40°) - 2089 J/KgK (90°) |
| Approx yield type A[#] | 1,7 kg/sqmt, 2/2,5 mm thick on flat surfaces |
| Approx yield type B[*] | 1,3 kg sqmt, 1/1,5 mm thick |
| Approx yield PITTURA THERMOFOTOCATALITICA | 280 g/sqmt |
| Shelf life when dissolved in water | 12 months |
| Package | 14 litre plastic buckets |
| Appearance | White doughy mass |

[#] Grain size for type A: 1-2 mm

^{*} Grain size for type B: smooth, 0,25-0,5 mm, 0,5-1 mm, 1-2 mm