



 **novablok**^{XPS} *Terrace*
THERMOPLASTIKI



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APPLICATION GUIDE

novablok^{XPS} Terrace

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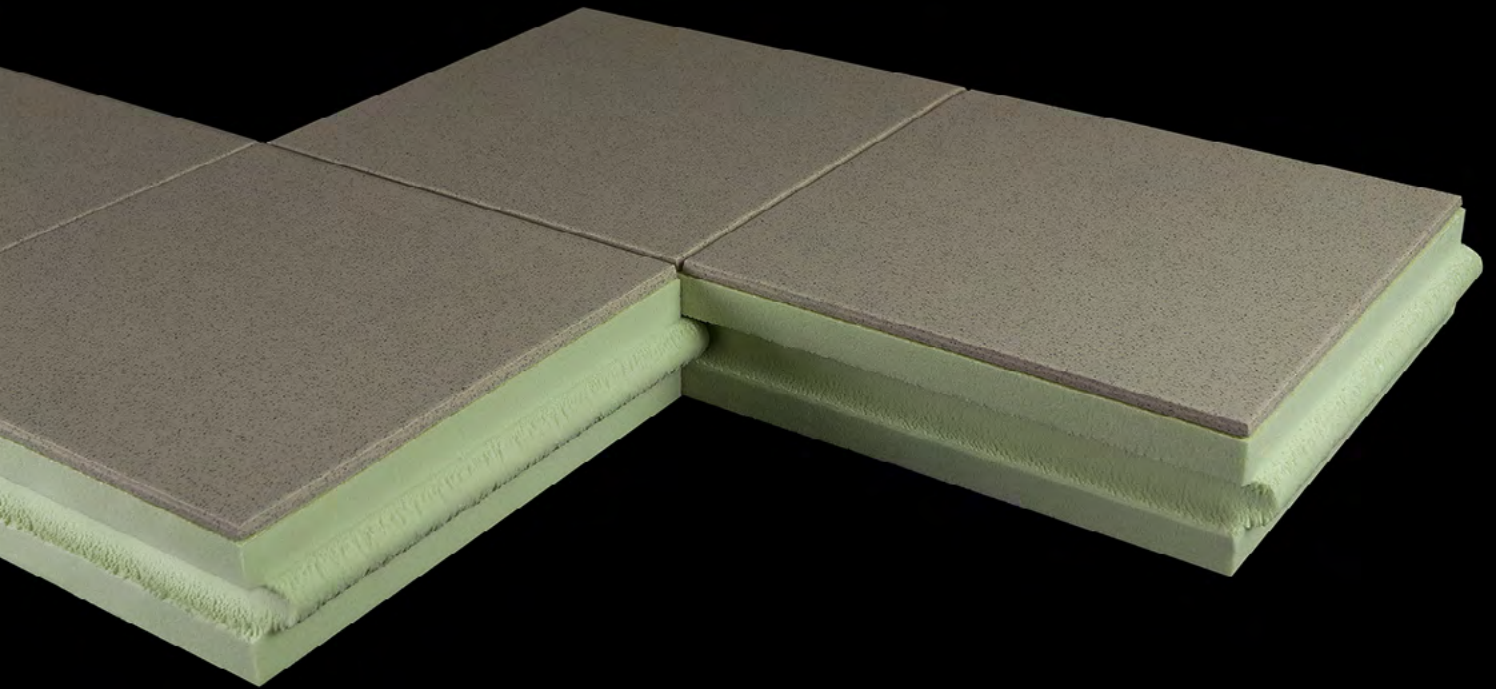
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THE ULTIMATE SOLUTION **FOR THE INSULATION OF YOUR ROOF**

Novablok Terrace is the new, innovative proposal by Thermoplastiki, which has come to provide a definitive solution to roof insulation by offering a complete inverted thermal insulation application for roofs.



INSULATION **FOR ROOFS...**

If you are seeking for a roof insulation solution, you are bound to have heard the following tricky phrase: "Inverted roof thermal insulation". But what does it really mean and how can this be integrated? The roof is typically one of the most vulnerable points of a building. It is the only point exposed to all weather conditions, from extreme contraction and expansion, to erosion due to rain, snow and the sun. However, the constant exposure of the roof to temperature and weather changes is not the only problem.

Another reason that makes the roof the most vulnerable point of a building is energy loss. An example from the interior of a building: The extended horizontal surface at the highest point, where hot air is concentrated, is a major problem as the principal point of internal heat loss in winter, while during the summer, its constant exposure to the vertical rays of the sun scorch the material and heat the interior, requiring more energy to cool it.

The only solution to these problems is to address them as a whole with integrated inverted roof thermal insulation. With the right work and the appropriate materials, this vulnerable spot can stop being a burden for the building in terms of energy wasted and as regards costs, both in terms of wear and energy consumption.



WHAT IS **INSULATION?**

Many times, people refer to insulation, when in fact what they mean is waterproofing. However, waterproofing cannot solve the problem completely. Moreover, the end result most of the times makes the roof inaccessible and its surface non-walkable. This simply means that, in conventional insulation, the result is achieved by adding a waterproofing membrane - as they address waterproofing only partially and do not have adequate thermal permeability coefficients, while they also preserve much of the temperature from exposure to the summer sun, thus requiring - in addition to frequent maintenance - large amounts of energy to cool the building. Furthermore, such a conventional insulation cannot guarantee results in terms of water permeability, since the slightest damage will allow water to easily pass under the materials.



Therefore, many will opt for some type of light insulation, with mortar coatings and light foam panels of various characteristics. In these cases, the results are not guaranteed because of the difficulty in installing the material, the complex process, the possible non-coverage of vulnerable points of the existing structure, combined with the easy deterioration of the material, either due to weather or its low structural and mechanical strength. Besides, these cases do not provide walkability and the roof can only be accessed in emergencies. The end result, no matter how financially tempting, is in fact a temporary solution - because of the vulnerability of the construction - and the maintenance cost will exceed by far the cost of an integrated insulation intervention.

INVERTED ROOF THERMAL INSULATION

Given the above, inverted roof thermal insulation is the best choice. But let's just explain what it stands for. In inverted thermal insulation, the thermal insulating material is above the waterproofing material, protecting it from extreme temperatures - which, combined with UV radiation, is the greatest enemy of waterproofing, even more than contact wear. However, this does not provide a walkable end result.

The final surface of this type of insulation should be covered by paving tiles or concrete products which will allow full walkability, while protecting all parts of the insulation in the best and most durable manner. Yet once again there is another important problem: The end result can be too heavy, far exceeding the indicated load capacity of older buildings.

HOW SHOULD A COMPLETE SOLUTION BE?

Let us think about how a complete inverted roof thermal insulation system should be and how it would work best, offering full coverage. Firstly, we must be able to prepare the space easily and without having exaggerated expectations from the product, for the perfect application of the system's waterproofing layer on the roof's surface. Next, a highly efficient thermal insulating material is required, with enhanced water permeability properties as well as excellent resistance to structural stress - ideally, this material would be extruded polystyrene - and finally the upper side should be covered by solid tiles, which will allow roof walkability. But are these enough?

Obviously not. As mentioned above, the entire application should be extremely lightweight, if it is to be used as an ideal solution for older buildings. Moreover, it should allow effortless installation even on top of older systems. Finally, the overall construction should not require the creation of thermal bridges, which can typically eliminate the effect of thermal insulation for a fairly large surface of the roof.



CHOOSING **novablok Terrace**

The above features are easily comparable to those of **novablok Terrace**, which has certified performance. **Novablok Terrace** combines excellent thermal insulation with high aesthetics, enhancing both the energy efficiency and looks of the horizontal roof surface, while adding all the properties for which novablok is known for to the value and functionality of the building.

Convenience and innovation in the application method of **novablok Terrace** panels make the entire surface walkable and non-slip, without requiring access corridors, while the absence of thermal bridges ensures homogeneous thermal insulation, eliminating the heat loss points formed in conventional insulations. Finally, the material itself has excellent dimensional stability, high resistance to extreme weather conditions and frost and its low weight makes it ideal even for older buildings.

In conclusion, our goal for effectively insulating a roof is to fully meet the energy-saving requirements, to completely protect the building from weather conditions, even in extreme weather, while at the same time allowing walkability on the roof surface and not significantly stress the building structure.

WHY

novablok Terrace



EXCELLENT THERMAL INSULATION

Excellent thermal insulation and aesthetic design combining **novablok** extruded polystyrene with two skid proof tiles for exterior use.



FULLY WALKABLE ROOF

Roof is fully walkable, thanks to the application of **novablok Terrace**.



PERFECT FOR EXISTING STRUCTURES

Perfect solution for existing structures because of the low weight per m² (20kg), which puts a minimum static pressure on the roof, making it suitable for use even in old buildings, without the need for removal of the existing base structures.



QUICK AND EASY APPLICATION

The lateral rib configuration ensures easy and fast installation, ensuring maximum stability and excluding the need for thermal bridges.



EXCELLENT STABILITY & RESISTANCE

Ultimate resistance with excellent dimensional stability, without any risk of cracking.



ULTIMATE RESISTANCE TO WEATHER CONDITIONS

Ultimate resistance to frost and extreme weather conditions. It protects the waterproofing layer against weather conditions without the need of frequent maintenance.



HIGH RESISTANCE TO COMPRESSION

Ultimate resistance to compression.



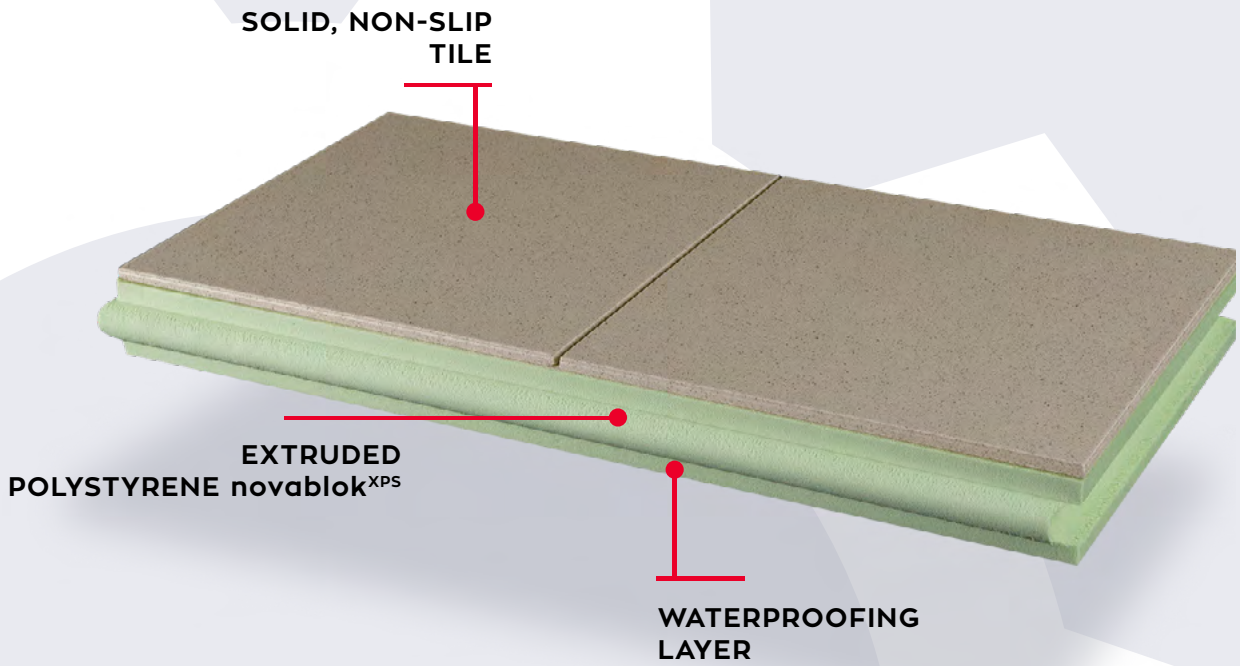
EXCELLENT AESTHETIC DESIGN

A solution of high aesthetic architecture.



EASY CLEAN

Easy to clean, since its surface is not porous.



TECHNICAL CHARACTERISTICS

| Technical characteristic | Value |
|--|--|
| Dimensions | 60cm x 30cm |
| Weight | 20kg/m ² |
| Insulating novablok thickness | 50mm & 70mm |
| Thermal conductivity of insulating novablok | 0.033 & 0.035 |
| Tile type | Solid, non-slip, 30cm x 30cm (2 items) |
| Tile thickness | 8mm |



APPLICATION STEPS

APPLICATION GUIDE FOR THE BEST ROOF INSULATION SOLUTION

Applying **novablok Terrace** does not require any specialisation, but it requires the correct inclination of the roof (at least 2%), as well as appropriate sealing and gutters for rainwater runoff. If the inclination and the sealing are not appropriate, they must be repaired. For the sealing layer, any sealing membrane will do.

You can use **novablok** panels before the application, so that the requirements of the Regulation on the Energy Performance of Buildings are met for all climate zones.

APPLICATION STEPS

1

STUDY



Careful study before the installation of **novablok Terrace** will ensure less cuts and waste. The application of tiles must take place on clean and even surfaces, always starting from the perimeter.

2

SPACE PREPARATION



We make sure there is a joint of 2-3 cm from the original parapet (if there is no parapet, it must be built) and on the roof perimeter for the contraction and the expansion of the insulating panels. In case the roof is over 50m², then an extra expansion joint should be maintained at the centre, with a width of 1-2 cm.

We use a special foam cord for the joint expansion to fill the gap before jointing.

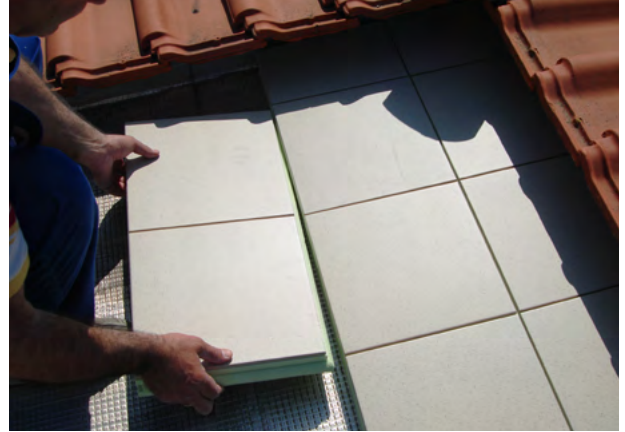
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INSTALLATION INITIATION

For the first two lines where **novablok Terrace** is applied, we must align the panels using suture, for optimal results.

4

INSTALLING INSULATING PANELS



Fitting the insulating panels for better stability takes place by moving the first piece of every new line around 30cm. The correct jointing of the pieces is necessary.

5

EXISTING SEALING



In case sealing has been done using asphalt membrane, the junctions must be straightened out so as to avoid height differences. In such case, we can use a grinding wheel to remove the insulating material (3-4mm) so that **novablok Terrace** is perfectly applied on the substrate. In case of spreadable waterproofing material, no grinding wheel is required, except for the rough parts.



6

WATER RUNOFF

Where there are gutters, we cut the tile using a wheel, leaving a gap for rainwater runoff.



7

JOINTS ADHESION

After the application of **novablok Terrace**, jointing follows with the use of special polyurethane adhesive sealant, that allows for the adhesion and the sealing of the tiles on the joints. The same procedure must also be followed for the expansion joints at the perimeter and the centre of the roof. This is how we achieve less moisture on the roof.

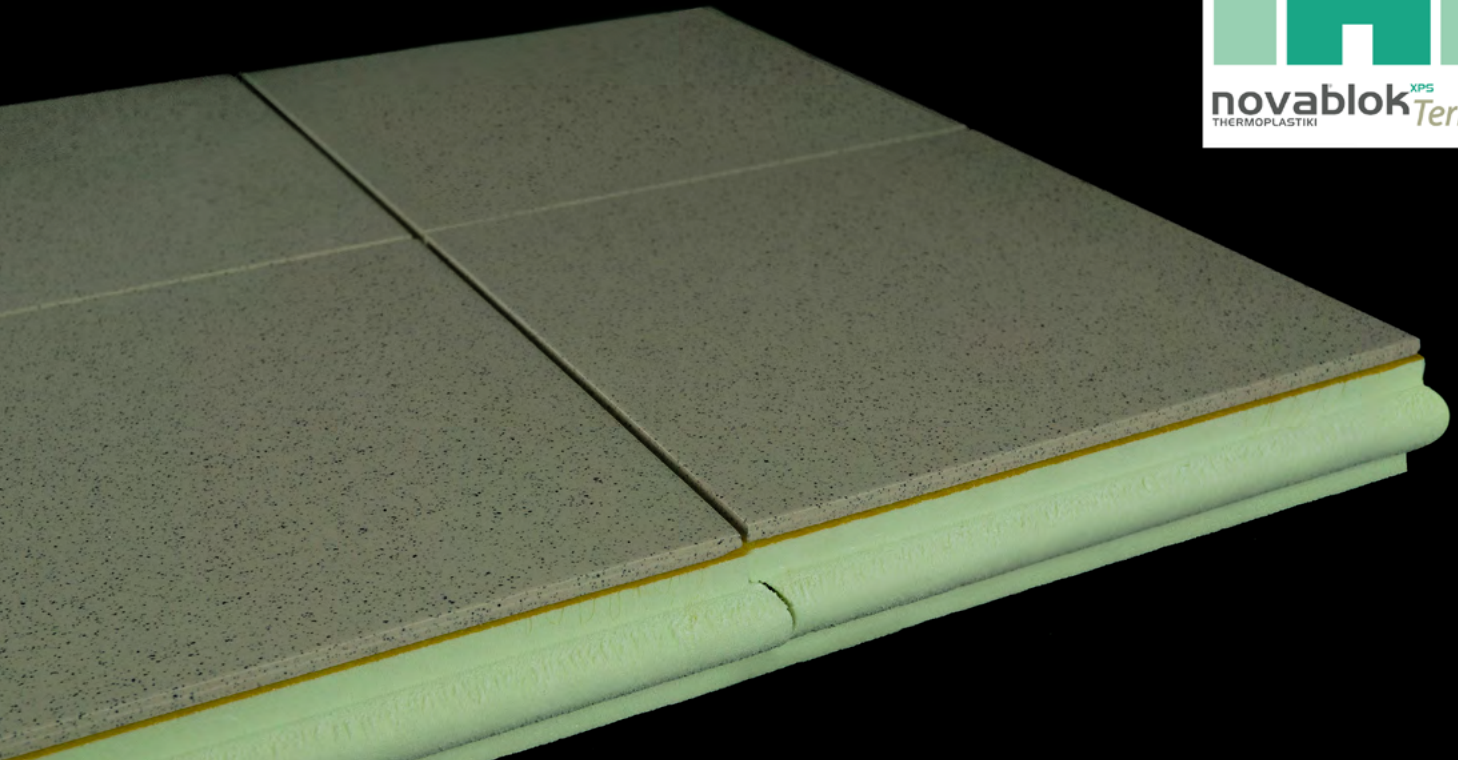


8

PERIMETER ANCHORING

On the roof's perimeter, the tiles must reach the parapet (a parapet is mandatory), where we install an aluminum corner (30X60mm) to cover the gaps we have created for the contraction - expansion and for protecting **novablok Terrace** from being carried away in case of a strong wind.

For the same reason, it is also important to correctly joint **novablok Terrace** panels.



COMPETITIVE ADVANTAGES

1

LIGHT WEIGHT OF CONSTRUCTION

With only half the weight of the competitive products, the 20 kg/m² of **novablok Terrace** make it ideal for older buildings.

2

PREVENTION OF CRACKING

Novablok Terrace tile does not allow for water absorption and does not crack; it is therefore ideal for outdoor use, withstanding even the largest temperature variations, properties which are not possessed by mortar cement products and conventional tiles.

3

EFFECTIVE ADHESION

The new adhesion technology with the use of glue PUR ensures that the tile will not be detached from the xps. The adhesive is not just conventional tile glue, thus one of its key properties is that it prevents water from penetrating between the tile and the insulation material.

4

DIMENSIONAL STABILITY

Contrary to mortar cement products, **novablok Terrace** tiles are not placed in line with the insulation material, but 1.5 mm inwards, in order to create even jointing. Thus, the product is capable of absorbing expansion and contraction for open-plan surfaces of up to 50m².

5

QUICK AND EASY APPLICATION

The 600×300 size and the panel's shiplap type profile make the product easy to apply, avoiding, at the same time, the creation of thermal bridges and preventing the tile from being carried away by the wind.

6

TOP QUALITY EXTRUDED POLYSTERENE

Novablok is top quality extruded polystyrene, with compressive-cracking strength of over 300kpa and full compliance with the declaration of the product's performance.

7

FULL PRACTICABILITY - INCOMPARABLE STYLE

Novablok Terrace is fully walkable as opposed to other competitive products and is therefore ideal for rooftops which are frequently visited. When jointing the product, the final result is also of high aesthetic architecture.

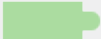
ANNEX

TECHNICAL CHARACTERISTICS OF TILES

| TECHNICAL CHARACTERISTICS OF TILES | Manufacturer measurements | EN14411:2012 standard characteristics |
|------------------------------------|-------------------------------|---------------------------------------|
| Sides dimensions | ± 0,6 % | ± 0,6 % |
| Thickness | ± 5.0 % | 5.0 % |
| Sides curvature | ± 0,5 % | ± 0,5 % |
| Sides variability | ± 0,6 % | ± 0,6 % |
| Flatness | ± 0,5 % | ± 0,5 % |
| Surface quality | according to the requirements | uniformity by 95% |
| Absorbency | ≤ 0,5 % | ≤ 0,5 % |
| Resistance to breakage | ≥ 1300 N | ≥ 1300 N |
| Mechanical strength | Min 35 N/mm ² | Min 35 N/mm ² |
| Resistance to friction | Max 175 mm ³ | Max 175 mm ³ |
| Resistance to frost | resistant | required |
| Resistance to chemicals | UA Class | Min UB |
| Resistance to staining | according to the manufacturer | applied control |
| Resistance to fire | A1 | A1 |
| Non-slip class | R10 | declared value |

TECHNICAL SPECIFICATIONS

novablok^{XPS} Terrace

| PROPERTIES | EN 13164 STANDARDS | ROOF/RF | | | | | | |
|--|-------------------------|---|-----------|---|-------|------|-------|------|
| Sides types | |  | | | | | | |
| Surface | | No skin | | | | | | |
| Length X Width | | 600x300 | | | | | | |
| Compressive stress σ_{10} (kPa) | EN 826 | 300 | | | | | | |
| Shear stress τ (kPa) | EN 12090 | 210 | | | | | | |
| Shearing measure G (kPa) | | 1650 | | | | | | |
| Tensile strength σ_{mt} (kPa) | EN 1607 | 400 | | | | | | |
| Thermal conductivity λ (W/mK) | EN 12667 or EN 12939 | <table border="1"> <thead> <tr> <th>λ</th> <th>R</th> </tr> </thead> <tbody> <tr> <td>0.033</td> <td>1.51</td> </tr> <tr> <td>0.035</td> <td>2.00</td> </tr> </tbody> </table> | λ | R | 0.033 | 1.51 | 0.035 | 2.00 |
| λ | | | R | | | | | |
| 0.033 | | | 1.51 | | | | | |
| 0.035 | 2.00 | | | | | | | |
| Thermal resistance R (m ² K/W) | | | | | | | | |
| | 50mm | | | | | | | |
| | 70mm | | | | | | | |
| Dimensional stability DS(23.90)% | EN 1604 | ≤0.5% | | | | | | |
| Indicative Density ρ (kg/m ³) | EN 1602 | 34 | | | | | | |
| Water vapour diffusion resistance μ | EN 12086 | 80~200 | | | | | | |
| Long-term water absorption with partial immersion W_{lp} (Kg/m ²) | EN 12087 | 0.02 | | | | | | |
| Non-combustibility class | EN 13501 | E | | | | | | |
| Thickness tolerances | | T1 | | | | | | |



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