



PRODUCT APPLICATION

Resine Isolanti O.Diena



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INSULATION OF THE BUILDING ENVELOPE.

Insulating means managing the behavior of heat flows in the living environment, **improving comfort and reducing costs**. The ideal insulating material should have the characteristic **of restraining the passage of this thermal flow**. The heat transmission is all the more limited the more the material has low thermal conductivity (λ).

SUPERCEL® BUILDING is a panel formed by a phenolic foam insulation core. It is resistant to chemical additives and is able to maintain its characteristics in both hot and cold environments (with an operating temperature range that spans from -50°C to +120°C). Available in different finishes, it is among the best thermal insulators on the market, with a $\lambda = 0,019$.

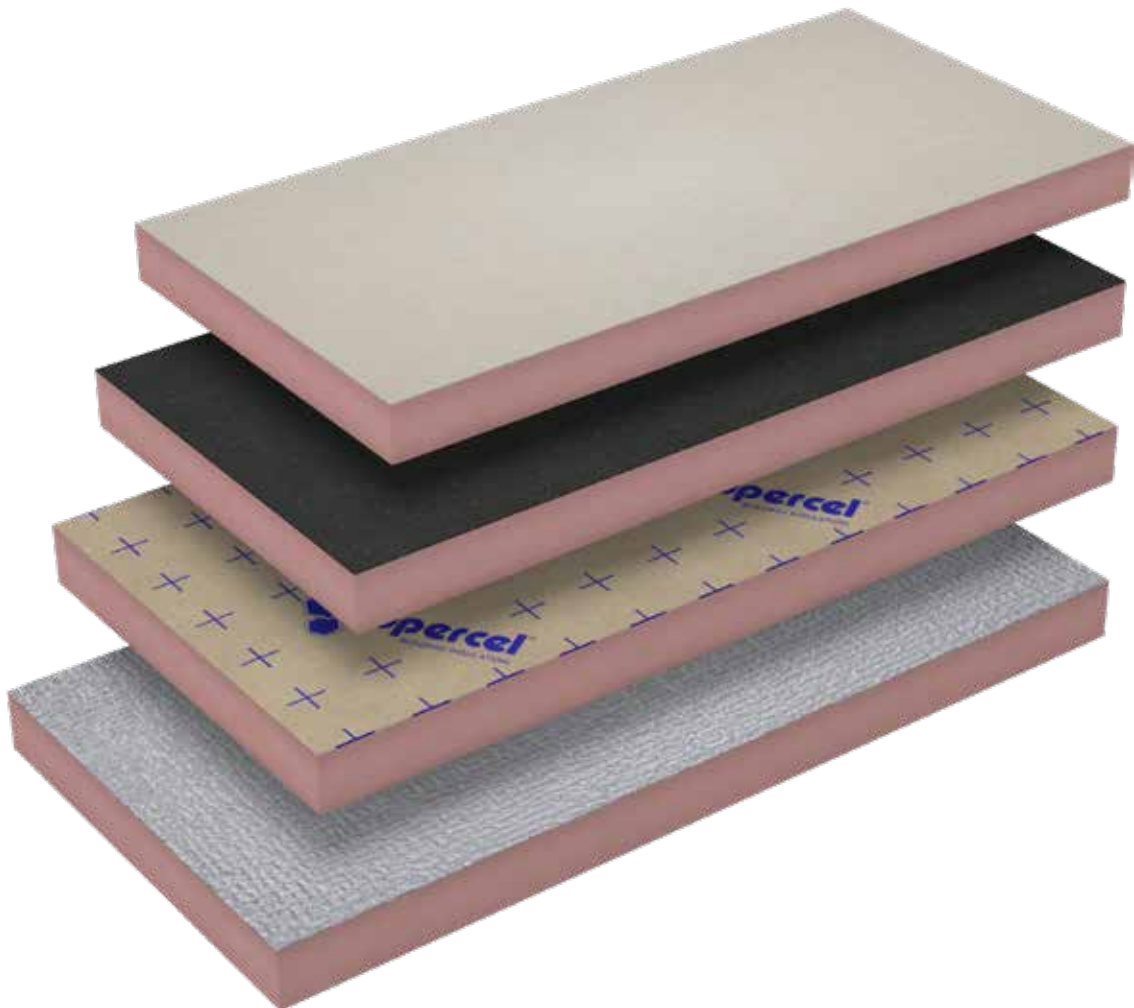
The main component of the panel is expanded phenolic foam, a rigid, closed-cell foam, which grants **SUPERCEL® BUILDING its essential properties: the insulating capacity, the fire resistance, the non-emission of toxic fumes in the event of fire, the vapour permeability and mechanical resistance.**

The various types of coatings are designed to increase the performance of the foam depending on the requirements of the specific application, ensuring that each panel reaches its maximum efficiency in any condition.

SUPERCEL® BUILDING is manufactured in standard dimensions of 1200 x 600 mm and 1200 x 2400 mm. On request panels can reach a length of 4800mm. The panel can be further cut by special machinery according to specific application requirements.

PRODUCT RANGE

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PANEL APPLICATIONS

	ALUMEN	VITRUM	FLAMMA	PAPYRUS
				
FLAT ROOFS				
Ballasted roof, under heat bonded bituminous membrane		•		•
Warm roof, under cold bonded synthetic membrane	•	•		
Paved warm roof		•		•
Carriageable warm roof		•		•
PITCHED ROOFS				
Warm roofs, insulation under bonded bituminous membrane		•		
Ventilated roof, insulation under sheat	•	•	•	•
Ventilated roof, insulation above sheat	•		•	
WALLS				
External coating system, insulation of perimetric walls		•		
In cavity insulation of external perimetric walls	•	•	•	•
Ventilated façade, insulation of external perimetric walls			•	
Internal insulation of walls	•	•		•
FLOORS				
Insulation of slab on grade	•	•		•
Insulation of heated floors	•	•		•
Insulation of civil or industrial cold storage floors	•	•		•

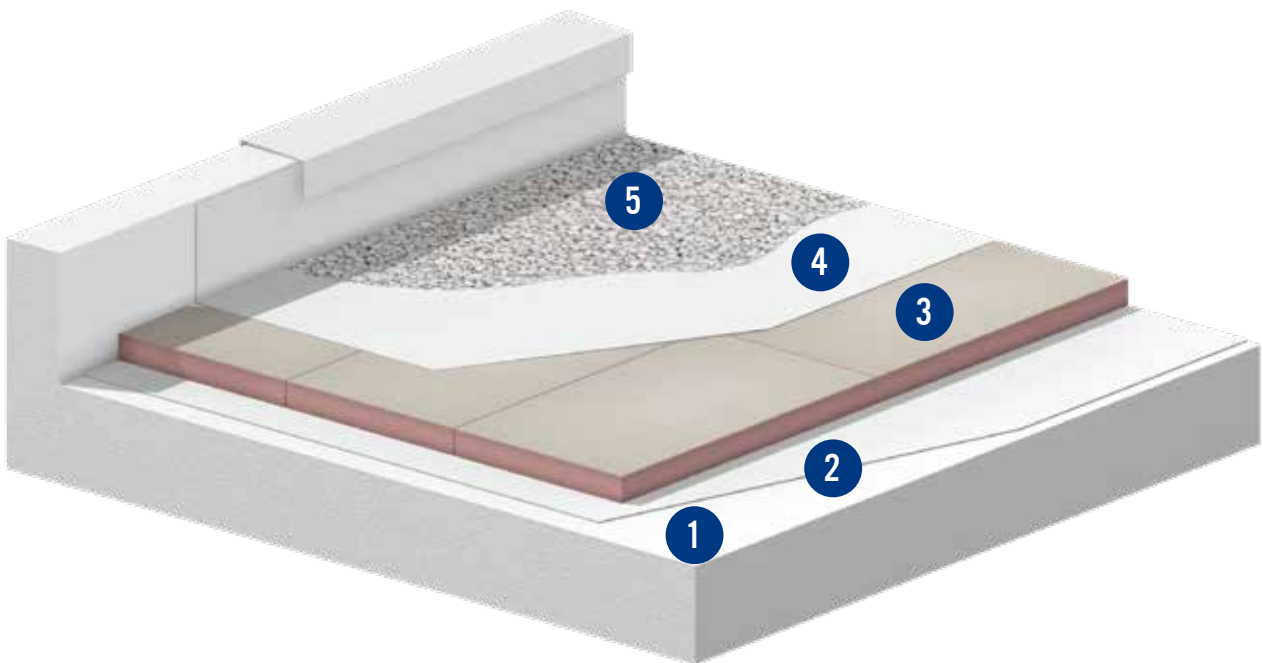




FLAT ROOFS



WARM BALLASTED ROOF, INSULATION UNDER HEAT-BONDED BITUMINOUS MEMBRANE.



STRATIGRAPHY:

1. Laying surface
2. Vapour barrier
3. **SUPERCEL[®] VITRUM**
4. Bituminous membrane heat-bonded by means of molten oxidized bitumen
5. Gravel/soil

GENERAL INDICATIONS:

The **warm roof** is among the most widespread insulation systems. **The warm roof is a compact roof, in which all layers are adjacent and rest on each other.** In this solution, which foresees the installation of the panel under a membrane, which, being waterproof, protects it from the weather, the insulation panel manages to maintain its characteristics over time.

When it comes to ballasted flat roofs, the insulation panel is placed above a structure where the screed is surmounted by a vapour barrier membrane. The insulation panel can be glued, mechanically fixed or simply applied as a dry mortarless layer over the underlying structure. The panels are then covered with a layer of bituminous membrane, which is heat-bonded to the panels through the use of molten oxidized bitumen and being the membrane a waterproof layer it protects the insulation panel and maintains its performance over time. Finally, above the water-tight membrane, a drainage layer of gravel or soil is laid, which also acts as a ballast.

This type of roofing requires the use of insulating panels with high resistance to bitumen solvents, as well as a good resistance to compression. It is to be noted that the application by torching is not recommended.

For this application, we recommend the use of **SUPERCEL® VITRUM** panels. Alternatively, **SUPERCEL® ALUMEN** are also suitable.

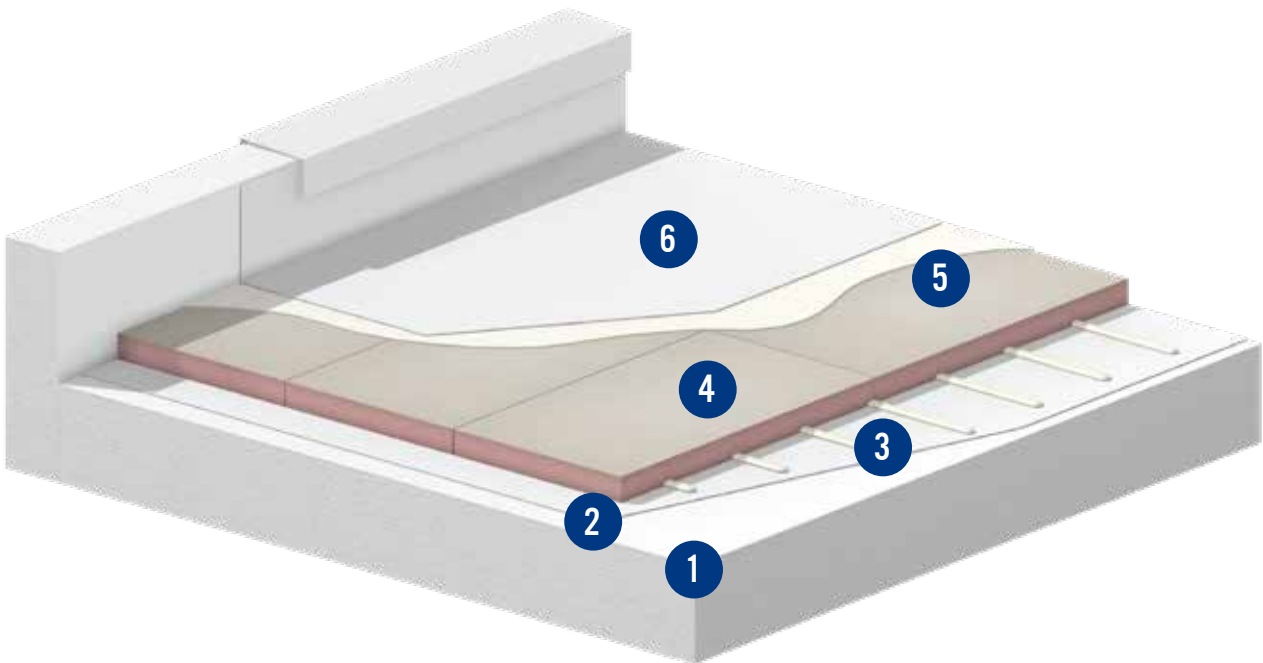
The fixing of the bituminous membrane to the panel can also be achieved by cold-bonding, through means of polyurethane or bituminous adhesives. Alternatively, it is possible to mechanically fix the two layers with dowels and plates, according to the specifications described by the UNI EN 11442 standard. It is advisable to consult specialized construction technicians to verify the most suitable application system.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

WARM ROOF, INSULATION UNDER COLD-BONDED BITUMINOUS OR SYNTHETIC MEMBRANE.



STRATIGRAPHY:

1. Laying surface
2. Vapour barrier
3. Adhesive
4. **SUPERCEL[®] VITRUM**
5. Specific adhesive or glue
6. Bituminous or synthetic membrane

GENERAL INDICATIONS:

The insulation panel is placed between an underlaying vapour barrier and a bituminous or synthetic membrane: both layers are to be cold-bonded to the panel. This way, the insulating panel is always protected by the water-tight layers and its performance is preserved over time.

SUPERCEL® VITRUM panels are recommended for this type of application. Alternatively, **SUPERCEL® ALUMEN** are also suitable.

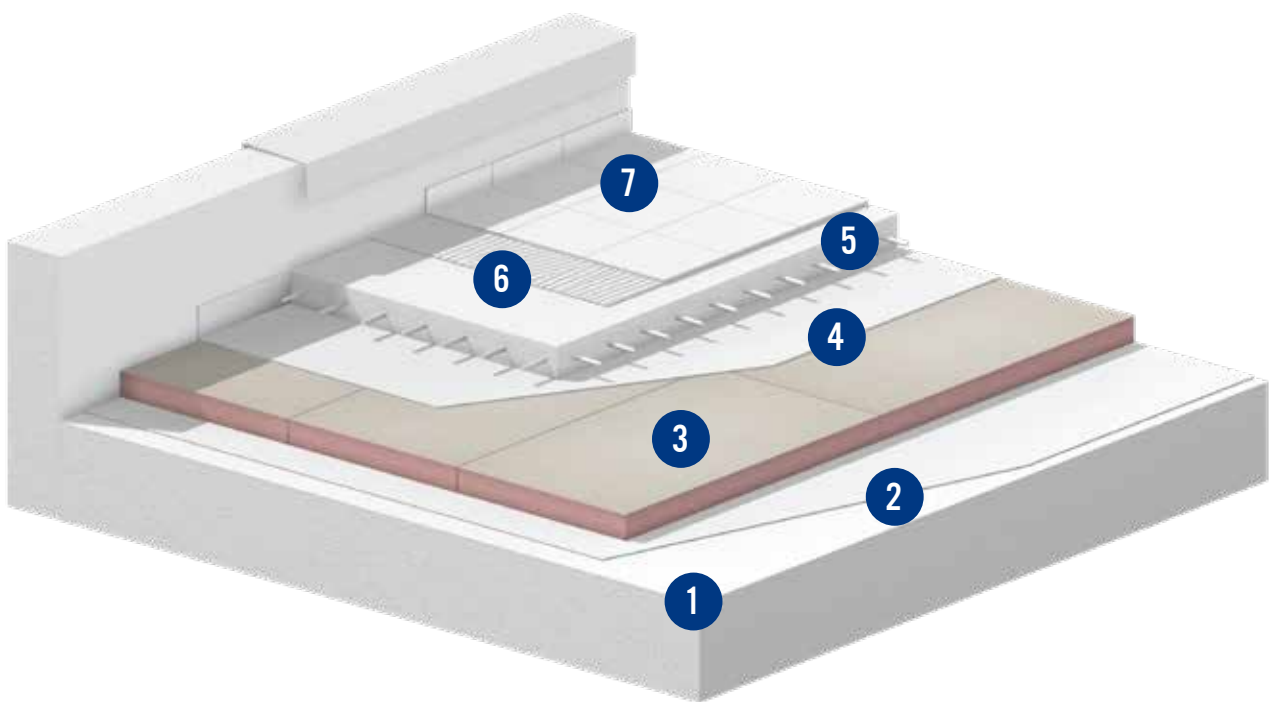
The synthetic or bituminous membranes, in the types suitable for cold-bonding, involve different laying procedures, according to their specific characteristics. Should mechanical fixing be used, the application methods described by the UNI EN 11442 standard must be followed. For the above reasons and in order to safely identify the most suitable application system according to the specific case, it is always important to consult specialized construction technicians.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

PAVED WARM ROOF.



STRATIGRAPHY:

1. Laying surface
2. Vapour barrier
3. **SUPERCEL[®] VITRUM**
4. Bituminous membrane
5. Reinforced screed
6. Adhesive
7. Floor screed

GENERAL INDICATIONS:

This type of roofing cover is obtained by placing the insulation panel as a dry mortarless layer over the underlying structure - made of a screed and a vapour barrier - and subsequently covered by a waterproof membrane. In order to make this roofing structure suitable for access and walkable, before the paving is laid, it is recommended to cast a layer of reinforced screed above the insulation panels.

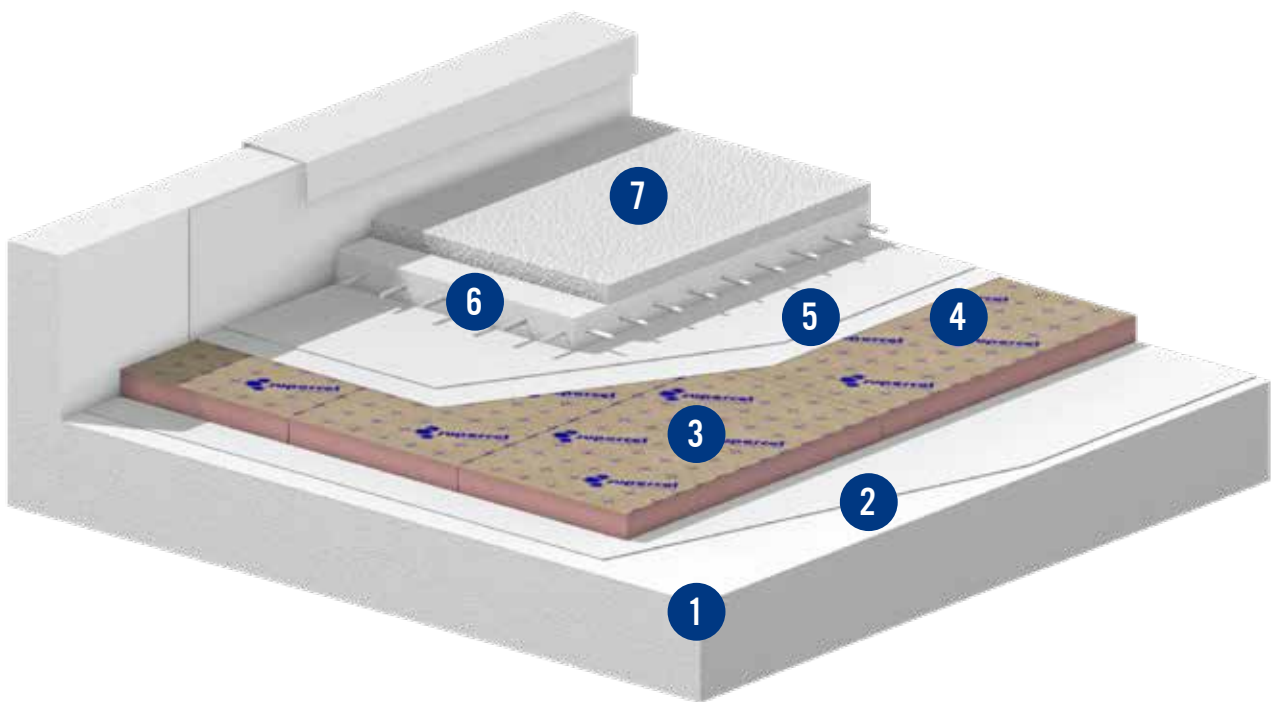
The ideal insulation material will have to respond well to compression, ensure good water vapour permeability and present a high-temperature resistance (especially for freezing and thawing cycles).

SUPERCEL® VITRUM is the most suitable insulation material in these applications. Alternatively, **SUPERCEL® PAPYRUS** and **SUPERCEL® ALUMEN** are also suitable.

The paved flat roofs grant complete usability of the roof, but they must also ensure comfort and safety to the underlying environments. The difficulty of maintenance after the structure is complete requires the utmost attention to project design and application process, in order to ensure a leak-proof system. For the above reasons, it is important to contact specialized construction technicians.

RECOMMENDED INSULATION PANEL SPECIFICATIONS	
SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.	
THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

CARRIAGEABLE WARM ROOF.



STRATIGRAPHY:

1. Laying surface
2. Vapour barrier
3. **SUPERCEL[®] PAPYRUS**
4. Bituminous membrane
5. Separation layer
6. Reinforced screed
7. Floor screed

GENERAL INDICATIONS:

The carriageable roof is a flat drivable roof, characterized by high operating load values. This type of roofing cover is obtained by placing the insulation panel as a dry mortarless layer over the underlying structure - made of a screed and a vapour barrier - and subsequently covered by a waterproof membrane and a thin separating layer - which divides the underlying layers from the overlying reinforced concrete screed. When using this solution, it is necessary to check the extent of the accidental loads and take appropriate precautions. The thickness and reinforcement of the screed will be calculated according to the expected loads and the relative safety calculations.

The laying and paving of this roof must be carried out by competent construction technicians and according to the reference standards.

For their structural characteristics of compressive strength, **SUPERCEL® PAPYRUS** panels are the most suitable for the insulation of the flat carriageable roofs. Alternatively, **SUPERCEL® VITRUM** and **SUPERCEL® ALUMEN** may also be used.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® PAPYRUS is a high performance rigid thermoset with a resin insulation core and a polythene coated paper based facing covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation for flat paved roofs with synthetic membranes. Insulation for floors.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Polythene coated paper based facing on both sides.

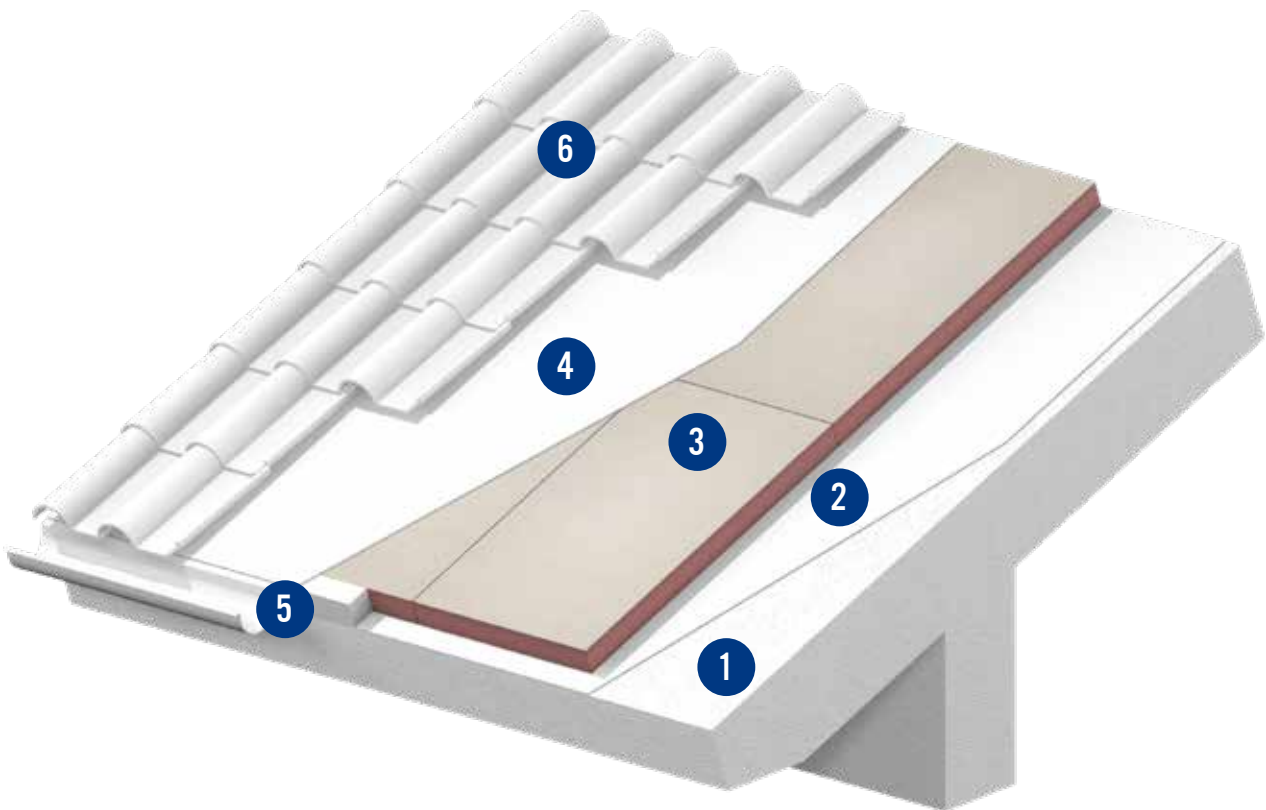




PITCHED ROOFS



WARM ROOF, INSULATION UNDER BONDED BITUMINOUS MEMBRANE.



STRATIGRAPHY:

1. Hollow-core concrete slab
2. Vapour barrier
3. **SUPERCEL[®] VITRUM**
4. Waterproof bituminous membrane
5. Fascia board and gutter
6. Roof cover in slates or tiles

GENERAL INDICATIONS:

The **warm roof**, which is a widely-spread application **where all layers are adjacent and rest on each other**, is used also in pitched roofs. In this particular application, the insulation panel must be placed on an underlying membrane that acts as a vapour barrier and under a synthetic or bituminous waterproof membrane. The waterproof membrane is very important, since it protects the underlying layers from water leakage especially in case of breakage or deterioration of the tiles or slates.

The fixing of the membrane to the panel can be achieved either by means of heat-bonding, using molten oxidized bitumen, or by means of cold-bonding, using polyurethane or bituminous adhesives. Alternatively,

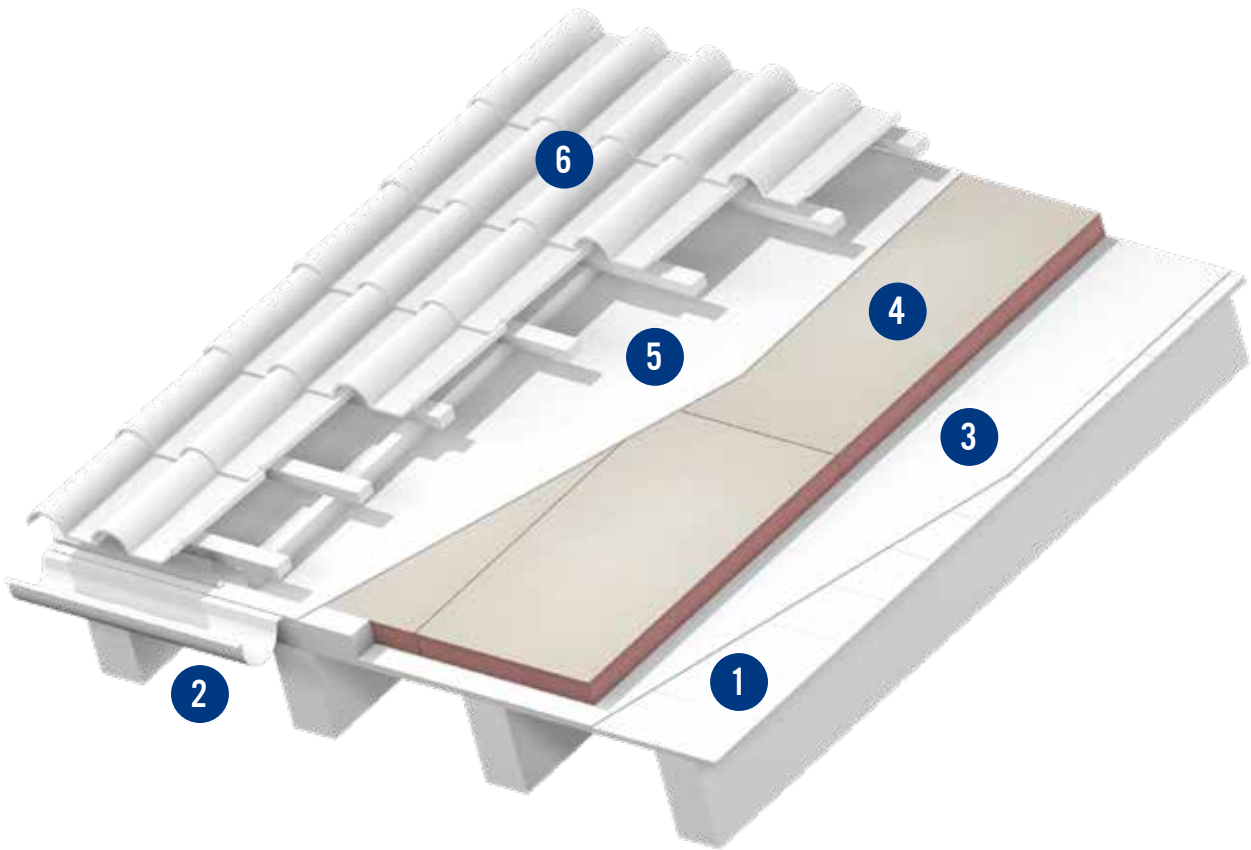
it is possible to mechanically fix the two layers with dowels and plates, according to the specifications described by the UNI EN 11442 standard.

The insulation panel must have a high resistance to heat, bitumen solvents and compression. The presence of the underlying vapour barrier is essential for the correct functioning of the system. It is to be noted that the application by torching is not recommended.

SUPERCEL® VITRUM is the best option when it comes to applications that see heat-bonded bituminous membranes, where molten oxidised bitumen is spread on the surface of the panels.

RECOMMENDED INSULATION PANEL SPECIFICATIONS	
SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.	
THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

VENTILATED ROOF, INSULATION UNDER SHEATH.



STRATIGRAPHY:

1. Roof slab on wooden structure
2. Fascia board and gutter
3. Watertight vapour barrier or breathable vapour screen
4. **SUPERCEL® VITRUM**
5. Water-proof breathable sarking membrane
6. Roof cover in slates or tiles

GENERAL INDICATIONS:

The cold roof, also called ventilated roof, is applied mainly on wooden structures and residential buildings. In the stratigraphy, **a ventilation space is left between the insulation panel and the tiles or slates roof covering.**

The tiles are placed as roof covering, on wooden slats or metal frames that act as batten, this is done in order to create an air chamber between the insulating layer and the roof covering itself. The ventilated air chamber avoids the formation of condensation that usually forms beneath the tiles in specific climatic environments. The ventilated roof stratification also prevents solar radiation from overheating the roof.

The insulation panel will be placed on top of a water-tight vapour barrier and below a waterproof

membrane which is vapour-permeable. Alternatively, you can consider both an underlying and overlaying layer of membrane that acts as vapour screen, which is water-proof and vapour-permeable. This second option allows for the regulation of water vapour flow coming out of the internal environment.

SUPERCEL® VITRUM is the preferred insulation solution in this type of application. You can also use **SUPERCEL® ALUMEN**.

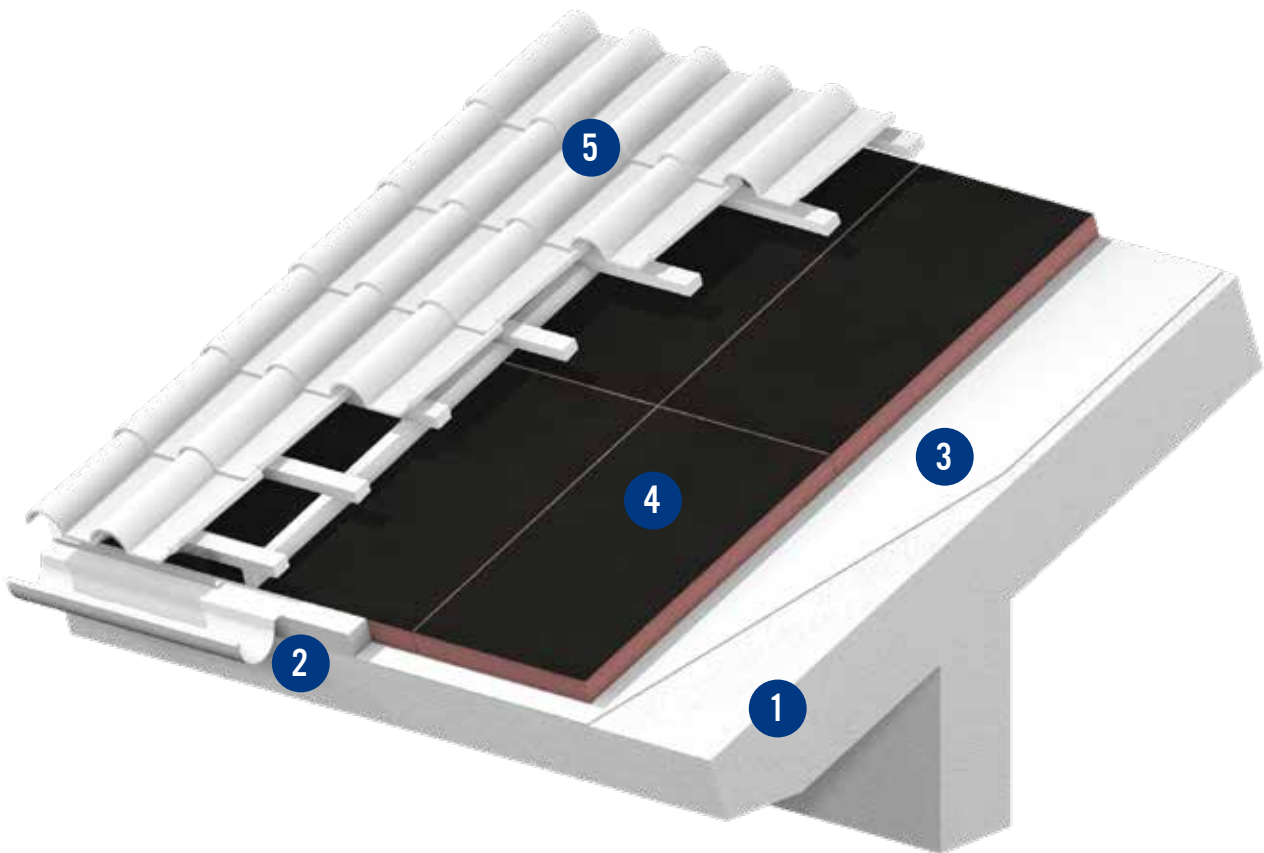
Ventilated roofs, regulated by the specifications contained in UNI 9460/2008 standard, help increase the roofing life-cycle and avoid the stagnation of condensation near the roofing elements. The waterproof membranes protect against water even in case of accidental breakage.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

VENTILATED ROOF, INSULATION ABOVE SHEATH.



STRATIGRAPHY:

1. Hollow-core concrete slab
2. Fascia board and gutter
3. Watertight vapour barrier or breathable vapour screen
4. **SUPERCEL® FLAMMA**
5. Roof cover in slates or tiles

GENERAL INDICATIONS:

This type of ventilated roof provides insulation over the waterproof membrane, which is laid on the bearing structure. The insulation panels are placed starting from the fascia (straight board that runs down the lower edge of the roof) which supports the gutter. The panels are then joined together by means of self-adhesive strips, which must have scarce/null water absorption characteristics and low coefficient to vapour diffusion. Particular attention must be paid to under tile micro ventilation, necessary both to reduce thermal excursions and to dry any water and condensation infiltration. The under-tile micro ventilation is ensured by laying a single or double frame of wooden slats, which support the tiles or slates. The frame is mechanically fixed by means of dowels of a length such as to pass through the ceiling, which offers a base of at least 3/4 cm.

In case of double frame, a second horizontal batten must be placed above the first, and can be mechanically fixed to the first by means of metal nails. This second batten provides support for tiles or slates.

To achieve the objectives of micro ventilation below tile, **SUPERCEL® FLAMMA** is the most suitable panel in our range. Its coating is formed by a layer of glass fibre and a layer of breathable membrane that makes it impermeable to infiltration of water and air, keeping the vapour permeability properties, inherent to the material itself, intact. In areas exposed to strong solar irradiation, it is advisable to use the variant **SUPERCEL® ALUMEN**, which other than the above, also reflects the solar rays thanks to the aluminium finishing layer.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® FLAMMA is a high performance rigid thermoset with a resin insulation core, a mineral added paper based facing covering one side and a graphite based membrane covering the other side. The latter facing should be placed on the side that risks being exposed to flames, guaranteeing both high fire performance and hydro-repellency. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation for ventilated surfaces. Ideal for all those applications that require a high fire resistance.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Graphite based membrane / Mineral added paper based facing.

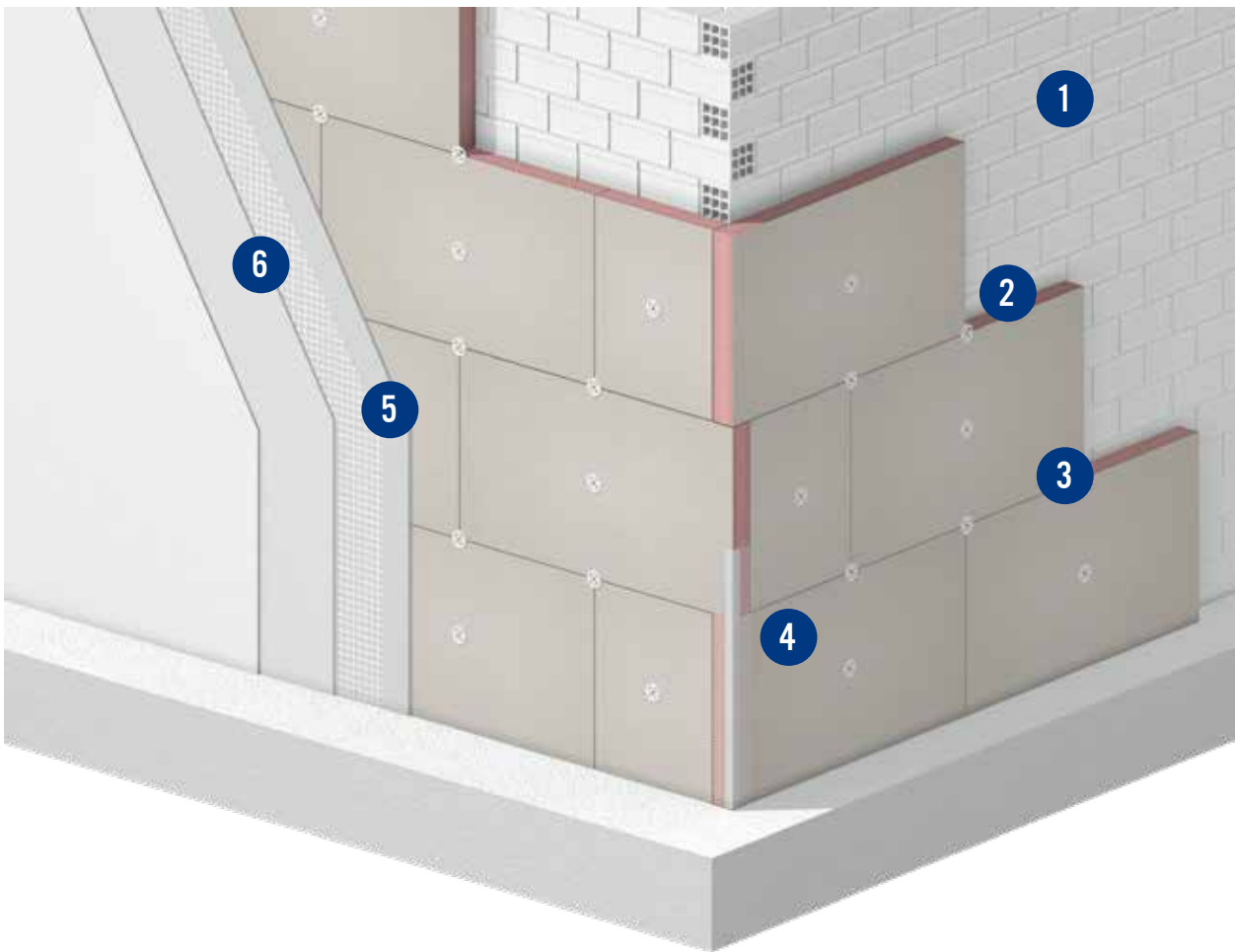




WALLS



EXTERNAL COATING SYSTEM, INSULATION OF PERIMETRIC MASONRY WALLS.



STRATIGRAPHY:

1. Loadbearing masonry
2. **SUPERCEL[®] VITRUM**
3. Dowels for mechanical fixing of panels to masonry
4. Edge profile
5. Base-coat plaster and reinforcing mesh
6. Finishing plaster

GENERAL INDICATIONS:

Coating insulation is a wide-spread system for external insulation. In recent years it has become an increasingly adopted solution, especially in cases of vertical external façades renovation. The insulation panels are placed on the outside and covered by reinforced plaster and mesh so as to increase the durability of the structure. External insulation has several advantages. Firstly, it guarantees the presence of a continuous layer of insulation, ensuring the elimination of thermal bridges, secondly it protects the structures from temperature fluctuations improving their durability. At the same time, the structure's mass, which in this case is concentrated inside, allows to exploit thermal inertia. This way, walls cool down and heat up more slowly.

The supporting masonry must be homogeneous and leveled, without imperfections above the centimetre, cleaned of any residues and dry. The insulation panels

must be fixed to the structure with a normal adhesive mortar, which is laid on a continuous curb along the perimeter of the panel and on its central point. The panels must then be mechanically fixed to the masonry by means of coat plugs, in reason of at least four points (near the edges of the panel), we recommend to follow the specifications described by the UNI EN 11442 standard. The first layer of screed is applied, in which a fibreglass mesh with reinforcement function is drowned. After removing any imperfections from the mesh, all other protective layers are applied including the external finish, generally consisting of mineral-based paint.

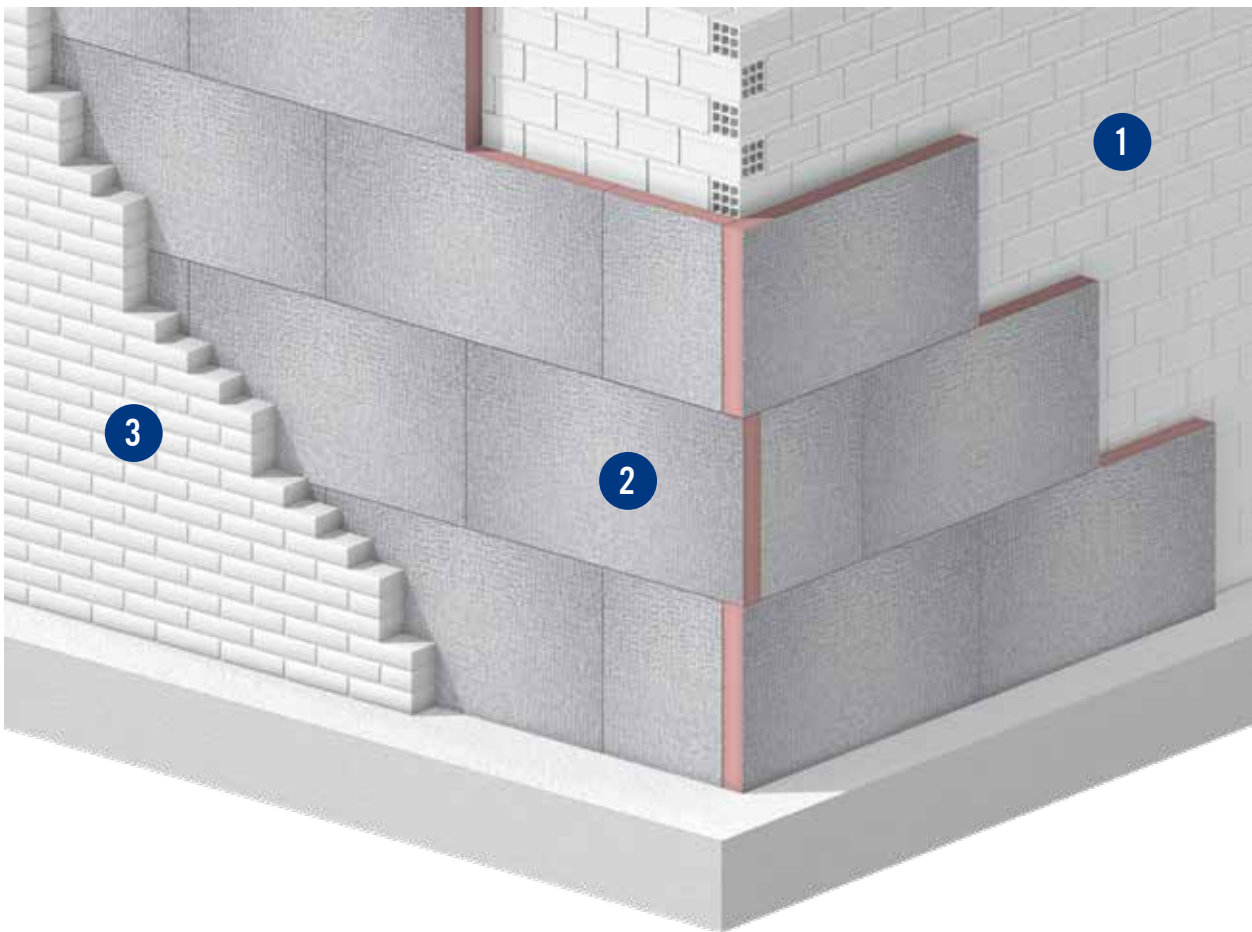
SUPERCEL® VITRUM is the ideal material for this type of application.

SUPERCEL® VITRUM can also offer high fire resistance. It is covered with a saturated glass tissue on both sides, with a fire reaction in class **B s1, d0**.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.	
THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

IN CAVITY INSULATION OF EXTERNAL PERIMETRIC WALLS.



STRATIGRAPHY:

1. Loadbearing masonry
2. **SUPERCEL[®] ALUMEN**
3. External non-loadbearing masonry

GENERAL INDICATIONS:

The thermal performance of an insulated wall is further enhanced by the creation of ventilated air cavities. The circulation of air between the external and internal walls - to which the insulation panels are fixed, maintains a low concentration of water vapour and protects the panel over time.

Usually, they are non-bearing walls, but they can also be bearing ones, depending on the project. The exterior face, often performed in masonry (solid bricks), protects the bearing internal wall and preserves the interlaid thermal insulation, given that both remain inaccessible to weather changes.

If the external masonry wall is constructed simultaneously with the installation of the insulation panels, the mechanical fixing of the panels is not necessary: it will be sufficient to lay them on the wall in

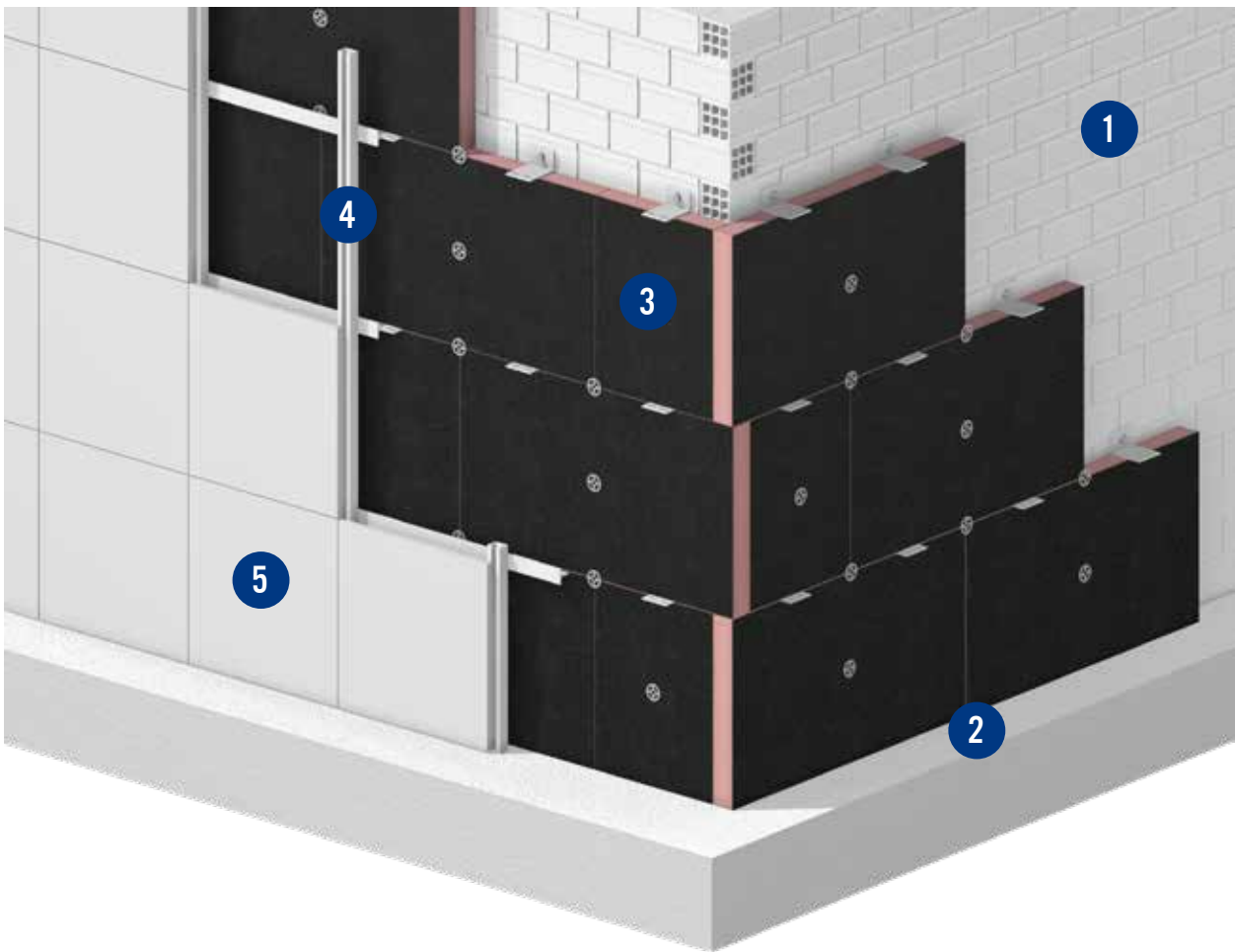
overlapped rows and with staggered joints. The panels must be placed adjacent to one another in order to create a homogeneous layer that avoids the creation of thermal bridges. In the case of buildings with a bearing structure and perimeter walls, the problem of thermal bridges is solved by covering the pillars from the outside with the insulation panels.

SUPERCEL® ALUMEN already has a coating that acts as a vapour barrier and is the ideal solution for the insulation of perimeter cavity walls. Alternatively, insulation panels that can guarantee a simple vapour screen, are those presenting a breathable coating, such as **SUPERCEL® VITRUM** or **SUPERCEL® FLAMMA**.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® ALUMEN is a high performance rigid thermoset with resin insulation core with aluminum vapor barrier foil facing covering the upper side and an internal saturated glass tissue facing covering the lower side. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.	
THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation for structural ceilings or flat roofs with non pasted synthetic membranes. Cavity walls, External ventilated facade systems. Civil or industrial floors. Heated floors.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Aluminum vapor barrier foil facing / Saturated glass tissue.

VENTILATED FAÇADE INSULATION OF EXTERNAL PERIMETRIC WALLS.



STRATIGRAPHY:

1. Loadbearing masonry
2. **SUPERCEL® FLAMMA**
3. Dowels for mechanical fixing of panels to masonry
4. Ventilated façade
5. External cladding system for ventilated façade

GENERAL INDICATIONS:

The ventilated façade is characterized by the presence of a continuous ventilated chamber interposed between the external vestment - which can be made up of a wide range of materials - and the internal vestment to which the insulation panel is attached.

Thanks to the many advantages it entails, the ventilated façade is an insulation system which is being used with increasing frequency. The air chamber ensures the disposal of water vapour, avoiding condensation and thus the creation of humidity and mildew. The external facing vestment protects the insulating slabs from UV rays and bad weather.

The research and technology of building materials have led to high-quality systems, techniques and finishes that guarantee both high thermal insulation performance and aesthetics of the buildings. On the inner-facing wall or on the supporting wall, usually composed of masonry in brick or concrete, anchors, with the role of supporting the structure of the façade, are fixed. This system consists of a scaffolding of vertical and horizontal profiles: after having positioned the profiles, the insulation panels are laid and fixed mechanically to the supporting wall. This way, a ventilated air chamber of about 3 cm in thickness is created between the insulating mantle and the external vestment. The last

step sees the installation of the façade finish, which is fixed to the structure of profiles that make up the anchorage system, usually in ceramic tiles or plates, natural stone, metal or other.

The frequency and positioning of dowels and plates must be correctly calculated. It is necessary to take into account the nature and the modularity of the finishing and the supporting elements which comprise the ventilated façade, as well as the loads deriving from the geometry of the building, along with the wind extraction force. It is therefore essential to follow the norms regulating mechanical fixings contained in the UNI 11442 reference standard and always consult specialized construction technicians.

SUPERCEL® FLAMMA, thanks to the excellent fire-reaction performance, which place it in the **B s1, d0** class, is particularly suitable for the thermal insulation of ventilated façades, especially in buildings that must be tested for the prevention of fires. Furthermore, with its hydro-repellent graphite based facing it also provides a water-proof layer, whilst guaranteeing nonetheless water vapor diffusion from the inside to the outside. This enables application of the external cladding with both sealed and open joints.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® FLAMMA is a high performance rigid thermoset with a resin insulation core, a mineral added paper based facing covering one side and a graphite based membrane covering the other side. The latter facing should be placed on the side that risks being exposed to flames, guaranteeing both high fire performance and hydro-repellency. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D

0,019 W/mK - 0,021 W/mK

SUGGESTED APPLICATION

Insulation for ventilated surfaces. Ideal for all those applications that require a high fire resistance.

PROFILES

Standard flat profile edges or tongue and groove fastening system.

FACINGS

Graphite based membrane / Mineral added paper based facing.

INTERNAL INSULATION OF WALLS.



STRATIGRAPHY:

1. Masonry
2. **SUPERCEL[®] VITRUM**
3. Adesive for the securing of panels
4. Internal plasterboard wall
5. Microperforated tape for joint reinforcement
6. Finishing plaster

GENERAL INDICATIONS:

The insulation of walls from the inside guarantees thermal efficiency of buildings without the need to resort to expensive interventions on the structures or façades. It is a highly used system in case of building renovations or in those instances where the objective is to increase the comfort and energy performance of a single house unit. In addition, internal insulation systems represent a good energy solution for all the environments occupied in a discontinuous manner, such as offices, commercial premises, second homes and in all those situations where there is a need to bring the indoor environment to the desired temperature.

SUPERCEL® VITRUM is the ideal solution for this type of application. Thanks to the high insulation efficacy, they allow to reach the required thermal resistance with considerably thinner thicknesses than those needed for other materials. **SUPERCEL® ALUMEN** are also valid alternative.

In this type of application insulation panels can be glued and fixed directly to the internal perimeter wall. When laying, the joints are to be sealed with reinforcing mesh belts. When fixing **SUPERCEL® BUILDING** panels with mortars, cementitious adhesives or polyurethane foams, it is recommended to adhere to the instructions and laying protocols provided by the adhesive manufacturer. Also, it is good practice to pay attention to the alignment of the panels and to prevent the adhesive or grout from penetrating the joints. Then proceed to the final painting.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® VITRUM is a high performance rigid thermoset with a resin insulation core and glass tissue based facings covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.	
THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation of flat roofs under fixed synthetic membranes and/or cold bituminous membranes. Insulation for tiled or slanted pitched warm roofs. Insulation for walls and/or floors. External insulation system.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Saturated glass tissue on both faces.

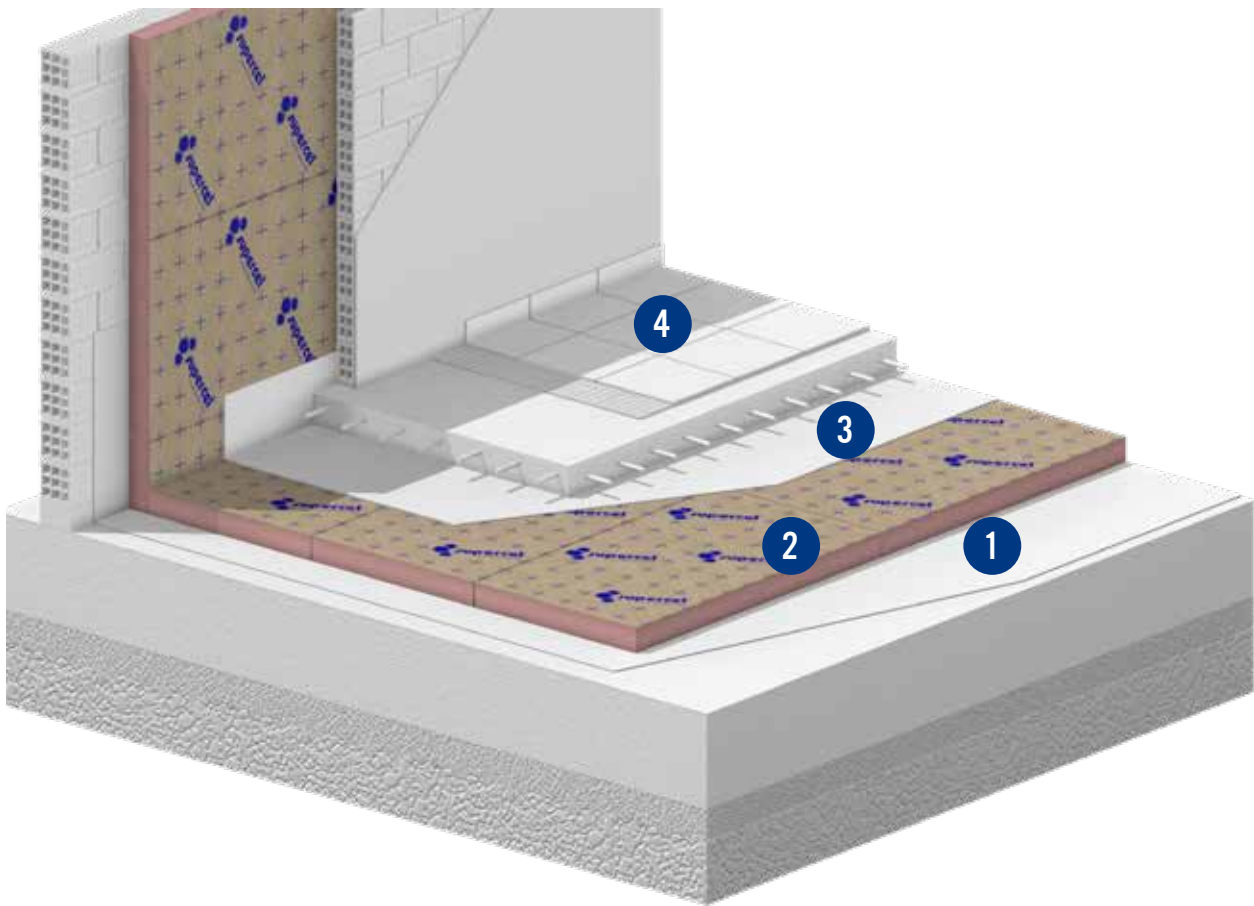




FLOORS



INSULATION OF SLAB ON GRADE.



STRATIGRAPHY:

1. Waterproof bituminous membrane
2. **SUPERCEL[®] PAPYRUS**
3. Vapour barrier
4. Floor screed

GENERAL INDICATIONS:

When insulating floors, the thermal insulation panels should be laid on the slab and under the floor. It is important to know that the insulation panel can be subject to possible condensation of water vapour. It is, therefore, necessary to maintain the surface temperature of the floor as close as possible to that of the indoor air temperature. The thermal insulation panel must possess good hygrothermal properties and good mechanical performance. The waterproof bituminous membrane, which is useful in order to avoid humidity, becomes necessary in the presence of surface aquifers. The type of vapour barrier must be assessed in relation to the internal and environmental hygrometric conditions.

Once clean and leveled, the slab must be protected by a vapour barrier, on which the insulation panels* are fitted. The panels do not need mechanical fixings: they are to be placed dry mortarless on the underlying surface. It is advisable to always seal the joints with a cold self-adhesive band, in order to ensure the continuity of the vapour barrier.

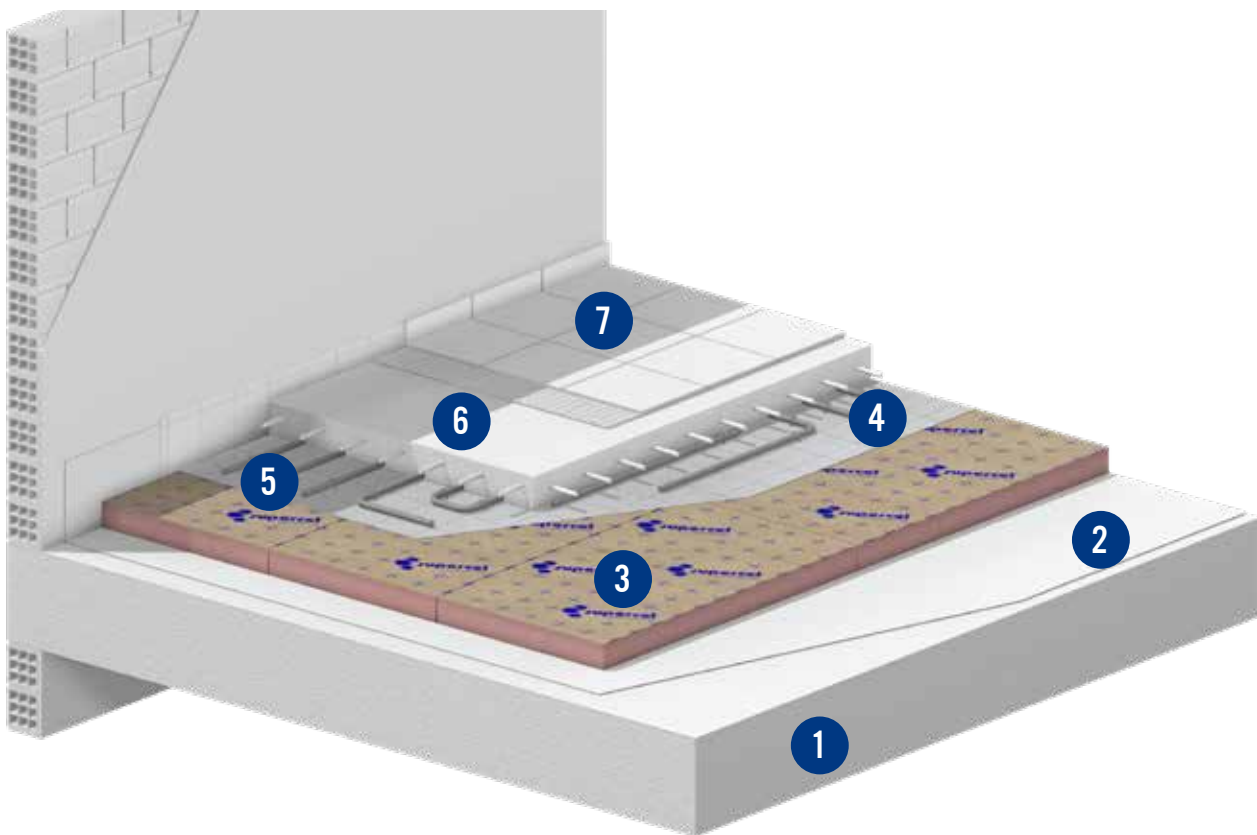
In the isolation of the floor against the ground, when looking for a solution that offers a simple vapour screen (which merely, regulates the flow of vapor without completely blocking its passage), **SUPERCEL® VITRUM** which have vapour permeable coatings is the best choice.

However should a vapor barrier be required, it is preferable to opt for panels with air-tight coatings such as **SUPERCEL® ALUMEN** or **SUPERCEL® PAPYRUS**.

*Make sure that the laying surface is clean and leveled; that the membrane is laid perfectly, with well aligned and bent joints, to avoid the passage of groundwater. The membrane must be mounted vertically on the surrounding walls, above the laying surface, so as to protect and hold the panel sideways. If two overlapping layers of SUPERCEL® BUILDING insulation panels are needed, it is advisable to lay them perpendicular to each other, so that the joints in the two adjacent layers do not coincide with each other.

RECOMMENDED INSULATION PANEL SPECIFICATIONS	
SUPERCEL® PAPYRUS is a high performance rigid thermoset with a resin insulation core and a polythene coated paper based facing covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.	
THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation for flat paved roofs with synthetic membranes. Insulation for floors.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Polythene coated paper based facing on both sides.

INSULATION OF HEATED FLOORS.



STRATIGRAPHY:

1. Slab
2. Waterproof bituminous membrane
3. **SUPERCEL[®] PAPHYRUS**
4. Separation layer
5. Heating system
6. Reinforced screed
7. Floor screed

GENERAL INDICATIONS:

In heated floors, to avoid the formation of cold areas, the insulation layer must be homogeneous and perfectly placed. With this type of flooring it is necessary to use insulation panels that are waterproof and vapour permeable, in order not to impair the performance of the heating system and at the same time avoid the formation of condensation and mildew. Moreover, the insulation panel should have excellent values: both in terms of thermal conductivity, so as to avoid heat dispersion, and in terms of mechanical resistance, because of the exposure to constant loads.

The panels are positioned and lined up against the underlying surface, covered by a waterproof membrane. A sheet of polyethylene is used as

protection from the subsequent casting of the screed. On this protection layer the pipes of the heating system are laid and then buried by a layer of screed. Lastly, the finish chosen as flooring is placed.

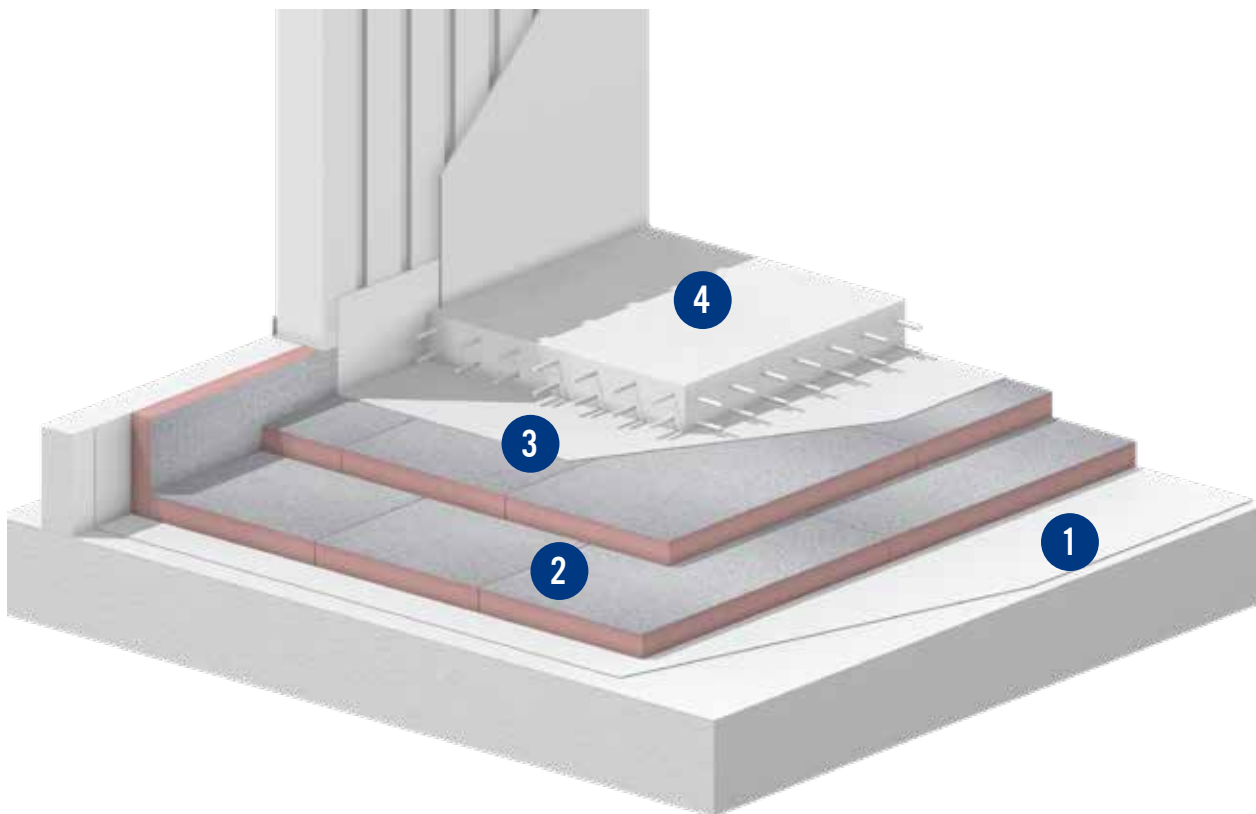
In underfloor heating systems, **SUPERCEL® ALUMEN** panels are the best solution. Thanks to the superior coating in waterproof aluminium, they act as vapour barrier. Alternatively, **SUPERCEL® VITRUM** and **SUPERCEL® PAPYRUS** are valid options.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

SUPERCEL® PAPYRUS is a high performance rigid thermoset with a resin insulation core and a polythene coated paper based facing covering both the upper and lower side of the panel. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.

THERMAL CONDUCTIVITY λ_D	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation for flat paved roofs with synthetic membranes. Insulation for floors.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Polythene coated paper based facing on both sides.

INSULATION OF CIVIL OR INDUSTRIAL COLD STORAGE FLOORS.



STRATIGRAPHY:

1. Vapour barrier
2. **SUPERCEL[®] ALUMEN**
3. Waterproof layer
4. Reinforced screed

GENERAL INDICATIONS:

This type of floor, which presents high-mechanical performance is made for civil or industrial low temperatures cold storage cells, where high resistance is required both in terms of static and dynamic loads. In fact it is always made up of a concrete structure that enables the drivethrough of trucks.

In this application, the insulation panels are placed on the clean and leveled slab, covering the entirety of the surface. In case of construction of a cold room, a waterproof membrane is first laid over the slab to form a vapour barrier. Over the layer consisting of insulation panels, that do not require mechanical fixings, a separator layer is placed: the objective is to

protect the insulation from the cement that will be cast as reinforcement mesh. The reinforced concrete has the function of distributing the loads. A layer of asphalt completes the structure. The thermal insulation chosen for this application must have a good compressive strength and the ability to withstand low temperatures. **SUPERCEL® BUILDING** panels in addition to high insulation performance, offer good mechanical resistance to loads and are perfectly suited for this kind of application. Among these, **SUPERCEL® ALUMEN** are the best choice because is finished with a air-tight coating that acts as a vapour barrier. **SUPERCEL® VITRUM** and **SUPERCEL® PAPYRUS** panels are also suitable for this application.

RECOMMENDED INSULATION PANEL SPECIFICATIONS

<p>SUPERCEL® ALUMEN is a high performance rigid thermoset with resin insulation core with aluminum vapor barrier foil facing covering the upper side and an internal saturated glass tissue facing covering the lower side. The panel is available in the following standard dimensions: 1200 x 2400 mm, 1200 x 600 mm.</p>	
THERMAL CONDUCTIVITY λ_p	0,019 W/mK - 0,021 W/mK
SUGGESTED APPLICATION	Insulation for structural ceilings or flat roofs with non pasted synthetic membranes. Cavity walls, External ventilated facade systems. Civil or industrial floors. Heated floors.
PROFILES	Standard flat profile edges or tongue and groove fastening system.
FACINGS	Aluminum vapor barrier foil facing / Saturated glass tissue.

GENERAL RECOMMENDATIONS OF BUILD UP: LAYING AND SECURING SUPERCEL® BUILDING PANELS.

- **TREATMENT OF LAYING SURFACE.** Before laying **SUPERCEL® BUILDING** panels, it is advisable to remove from the surface sand, gravel and in general any roughness present from the laying surface that can compromise the adhesion or cause puncture of the waterproof coating and as a consequence the panel.
- **MANAGEMENT OF WATER VAPOUR.** Evaluate the thermo-hygrometric conditions of the environment below the cover and prepare the necessary layers for the management of water vapour. On insulated non-ventilated roofs, before laying **SUPERCEL® BUILDING** insulation panels, it is recommended to place a vapour barrier, combined with a layer of vapour diffusion membrane, in order to eliminate the risk of water absorption from the insulating material, which could lead to the deterioration of its thermal characteristics.
- **MANAGEMENT OF THERMAL BRIDGES.** In order to avoid thermal bridges, it is advisable to carefully align the panels, adopting all the precautions needed to avoid a potential detachment of the same during build up. In the case of pitched roof build up, the panels must be laid with staggered joints and on rows parallel to the eaves line. The use of panels with tongue and groove fastening systems is recommended, minimizing as much as possible the size of the joint, this compensates for the potential dilatation of the panels and the structure in general.
- **LAYING THE PANELS.** In roof applications, especially when insulating under membrane, it is important to properly fix the panel to the structure. **SUPERCEL® BUILDING** panels can be fixed following different methods described by the regulation standards *. Based on the application conditions and the type of cover adopted, the laying of insulation panels can be done in different ways. **Dry mortarless lining**, method applicable on roofs with a slope of less than 5% and with a heavy protection ballast or in the case of an inverted roof structure (with the insulating panel placed above the sealing element) and the presence of a heavy ballast. **Heat-bonding** with molten oxidized bitumen applied by sprinkler or **cold-bonding** with bituminous mastic, adhesives or polyurethane foams. By **torching**, reviving specific bituminous membranes. By **mechanical fixing**: in this case, for panels of a size of 600 x 1200 mm, there are usually 4 fixing points (at the corners, at a distance of at least 50 mm from the edge). For larger panels, the fixing points will be increased to a proportional extent and, in addition to the perimeter fixings, will also include central fixings. The type of fixing (dowels, screws, self-tapping screws, nails, etc.) varies according to the type of support*.
- **MECHANICAL FIXING.** If heavy protection is not applied, in environments with strong wind or on roofs with a slope of more than 30%, mechanical fixing of panels is mandatory. The minimum number of mechanical fixings will be defined during design and will vary according to climatic conditions and slope of the roof. As an indication, apply 5 fixings per 1200mm x 600mm panel (one in the centre and the others in the corners, at a distance of about 50 mm from the edges). The mechanical fixing is moreover **mandatory on unstable structures** subjected to cyclic movements (metal structures and tensile structures) and **in correspondence of the perimetric areas of the roof**, which are more exposed to wind depression and therefore subject to the risk of detachment of the cover.

* The adhesion between panel, vapour barrier and structure and, in general, an in-depth description of the laying of the insulating panels are contained and described in the UNI 11442 standard. Our Technical Office is available for any further information requested.

MEMBRANE POSITIONING, GENERAL APPLICATION SYSTEMS.

Membranes have the function of protecting against water infiltration and moisture penetration. The membranes in use are differentiated by their water vapour resistance/permeability and can be categorized as breathable or non-breathable. The breathable membranes have the function of slowing/regulating the vapour, adjusting its flow. The non-breathable membranes, which are also called “vapour barriers”, completely exclude the passage of water vapour. The insulation panels are always in contact with the membranes, thus, in order to guarantee an efficient insulation package, it is very important that the adhesion between the two and the structure is carried out according to regulation standards, with the utmost precision and professionalism. There are different membrane types present on the market, which can be divided into two macro categories, these are: **bituminous** and **synthetic** membranes.

With the sole exception of laying by torching, the membranes can be placed on the **SUPERCEL® BUILDING** panels according to normal application methods.

- **DRY MORTARLESS APPLICATION.** The membrane is positioned on the surface, totally independent from the structure. It is a laying system applicable on roofs with a slope not exceeding 5%, because it requires a heavy ballast, which acts as protection layer (such as: gravel, cement tiles, cement casting, etc.).
- **COLD - BONDING APPLICATION.** The membrane is laid on the panel and fixed using polyurethane adhesives or monocomponent foams in canisters.
- **HEAT - BONDING APPLICATION.** The membrane is laid on the panel and fixed by means of a sprinkler, with which molten oxidized bitumen is spread. The application must be uniform and the temperature of the bitumen must not exceed 150°C.
- **MECHANICAL - FIXING APPLICATION.** The membrane is laid on the panel and fixed with dowels or other fastening elements, it is always recommended when heavy protection is not contemplated/applicable, and in all those environments where there is presence of strong wind or on roofs with a slope of more than 30%. The type of fixing chosen varies depending on the support and the application. The minimum number of mechanical fixings is defined during design and varies due to climatic conditions and the slope of the roof^{*t}.
- **APPLICATION BY TORCHING.** It is carried out by reviving the bituminous membrane torching it with a propane gas torch. The laying by torching solutions are chosen according to the characteristics of the support and the slope of the roof. **This type of application is not compatible** with **SUPERCEL® BUILDING** panel coatings.

*For a detailed description of how to lay and fix the membranes, reference must be made to the UNI 11442 standard. We also advise to rely on specialised construction technicians.

INDICATIONS FOR USE

When using SUPERCEL® BUILDING panels it is worth taking into consideration the following:

The uniformity between the insulating panel and the plugs/fittings/support beams

- Accurately measure the existing distance between the plugs/fittings/support beams before cutting the panels, as these distances can vary.
- Ensure that the insulation panels are flush with each other and that there is a snug fit between the insulating panel and the beams/joints/studs.
- Fill all the gaps with a sealer.

The functions of the insulation panel

- Remember that the SUPERCEL® BUILDING insulating panel is not designed with the intention to provide a finished interior lining. For this reason it should be covered with an appropriate finishing panel (for example, plasterboard).

The cuts to be carried out

- Carry out the cut by using a toothed saw, or marking with a sharp knife the concerned section to then break the panel by applying pressure.
- Ensure an accurate cut so as to construct joints that are flush and which ensure continuity of insulation.

Daily working practices

- At the end of each working day, or whenever the work is interrupted for long periods of time, it is a good practice to protect the panels from moisture and possible bad weather.

Availability

- SUPERCEL® BUILDING is available through specialised distributors and retailers of building materials.

Packaging and storage

- Polyethylene packing of the SUPERCEL® BUILDING line, which is recyclable and biodegradable, must not be considered appropriate for external protection.
- Ideally, the panels must be stored inside a building. If, however, external storage cannot be avoided, the panels must not be in contact with the ground and must be covered with an opaque polyethylene sheet or a tarpaulin. The badly positioned panels, that have become wet, must not be used.

Health and safety

- The SUPERCEL® BUILDING product range is chemically inert and therefore safe to use/handle.
- It is possible to request a safety sheet with data concerning this product.

Resine Isolanti O. Diena S.r.l.

Viale Zanotti, 86
27027 Gropello Cairoli (PV)
T. + 39 0382.81.59.79
info@resineisolanti.com

www.resineisolanti.com

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