Contents

KIBITHERM®

THERMAL INSULATION SYSTEM

KIBITHERM: a certified system

KIBITHERM is a system for external insulation (with cladding) of the walls and/or ceilings of buildings, suitable for:

- new buildings, when you want to limit losses due to the discontinuity of conventional insulation systems and you want to make use of the inertial capacity of external construction components to the benefit of the internal spaces;
- existing buildings if you want to reduce energy consumption and improve environmental conditions.

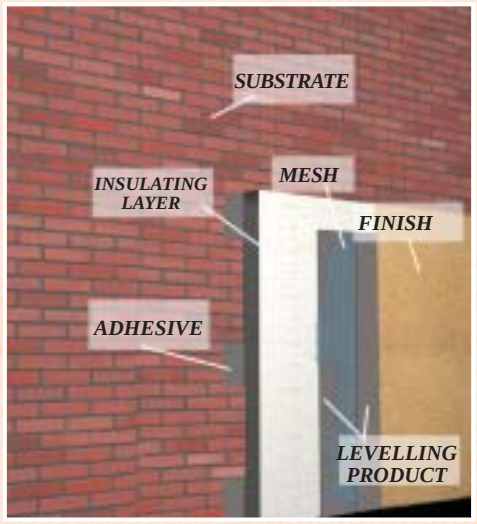
The KIBITHERM system is a CERTIFIED system which has the compulsory European Technical Approval (ETA) that is required to verify the performance and durability of the external thermal insulation system before it is put on the market.

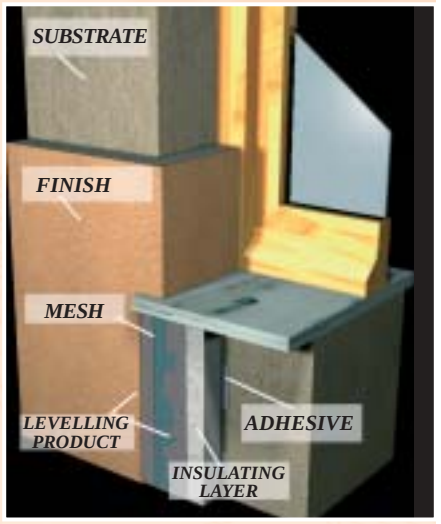
The various finish versions of the KIBITHERM system were subjected to artificial ageing tests in the ITC (CNR) laboratory to prove its reliability over time.

KIBITHERM is a "glued system with additional mechanical fastening" and is made up of:

- adhesive;
- insulating layer;
- reinforcing mesh in glass fibre;
- render base layer (levelling);
- finishes;
- accessory materials (aluminium sections, polypropylene attachment plugs for insulation systems, nylon attachment plugs for the sections).

This system is categorised as having CLASS II impact resistance.
The system can resist impacts with a force equal to 3 J (1/2 kg spherical body dropped from a height of 0.61 m) without showing signs of breakage.

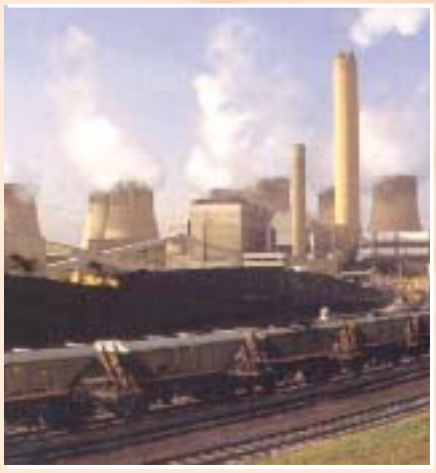




Why insulate with KIBITHERM

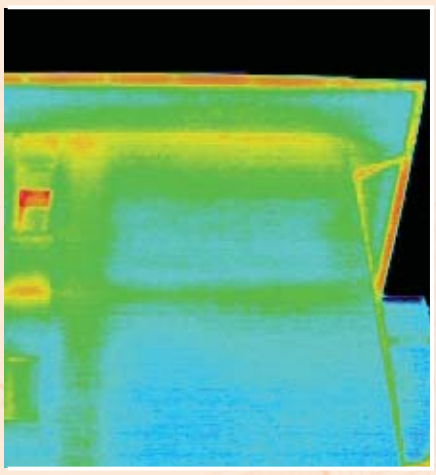
To eliminate the condensation problems and mould caused by discontinuous insulation

In almost all cases mould and black marks are found near pillars, beams and window jambs. They are caused by defects in the insulation in those areas which result in some parts of the walls having surface temperatures that are significantly lower than adjacent areas. A low wall temperature in one area means that the air touching the wall in that area has a low temperature, leading to high relative humidity. Low temperature and high relative humidity are the conditions in which surface condensation phenomena arise and mould forms on the walls as a result.
As it insulates from the outside, KIBITHERM guarantees thermal uniformity on the walls and high surface temperatures, thus minimising the effects of surface condensation.



To limit energy consumption and improve environmental quality

In industrialised countries the energy consumed for the air-conditioning (heating and cooling) of buildings is between 35% and 60% of total energy consumption.
More and better insulation is imperative for the future in order to reduce this enormous consumption and to limit the pollution it leads to. To this end, an energy certification system, created by the European Community, has been in use since 1/1/06. This system classifies buildings according to their foreseen energy consumption. As a result of this, the energy performance of construction components has had to be improved. Of the various types of insulation available, external insulation provides you with the greatest energy efficiency at the lowest cost. External insulation using KIBITHERM minimises losses through thermal bridges and guarantees that the heat introduced into the environment can accumulate in the outside walls to then be put back into the internal environment at the end of the heating cycle.



To improve thermal comfort

As well as being related to the temperature of the air, the thermal comfort of an environment also depends on the surface temperature of the outside walls as radiative exchanges develop between the human body and the wall at a lower or higher temperature. The KIBITHERM external insulation system can guarantee high surface temperatures on the walls and thus greater environmental comfort at a lower energy cost as a result.

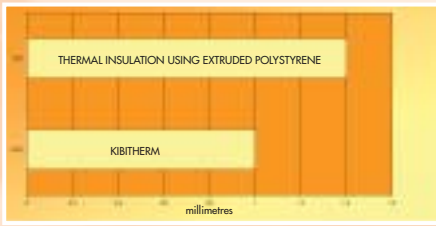
KIBITHERM performance features

KIBITHERM can be used on old or new buildings and on substrates made of:
- structural clay brick and/or stone bearing walls;
- rendering on reinforced concrete frame and infill walls or to brickwork structure;
- concrete.

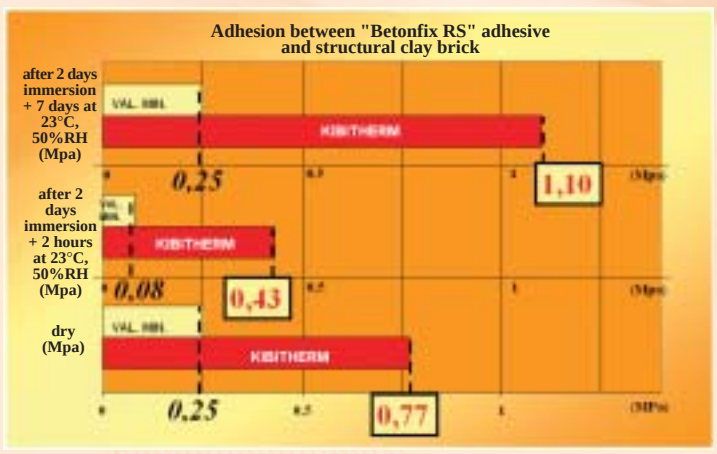
The product has been tested in laboratory to ensure compatibility with various different substrates and adhesion over time.

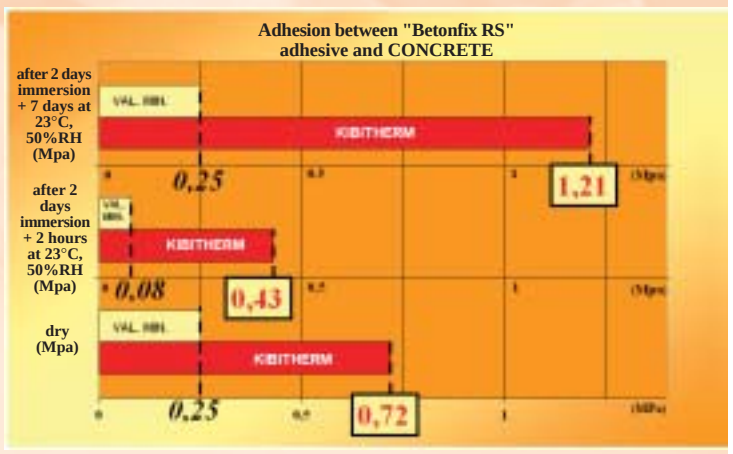
Thermal insulation capacity is guaranteed by the very low thermal conductivity of the system. KIBITHERM guarantees a lambda value of 0.036 W/m°K compared with 0.06-0.07 for insulating plasters, and 0.05 W/m°K for fibrous products. The use of EPS, known for its low thermal expansion properties compared with other types of insulation, protects against the risk of cracking that is common in insulation materials with a higher thermal expansion ratio (such as extruded polystyrene).

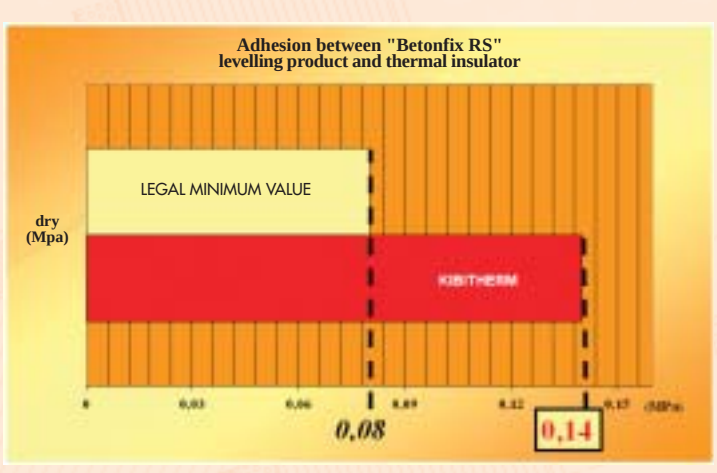
KIBITHERM guarantees an excellent level of bonding, even after the product has aged, as well as superior capillary action and water vapour permeability. It performs to a standard 3-4 times higher than that requested in applicable legislation, as illustrated in the graphs below.

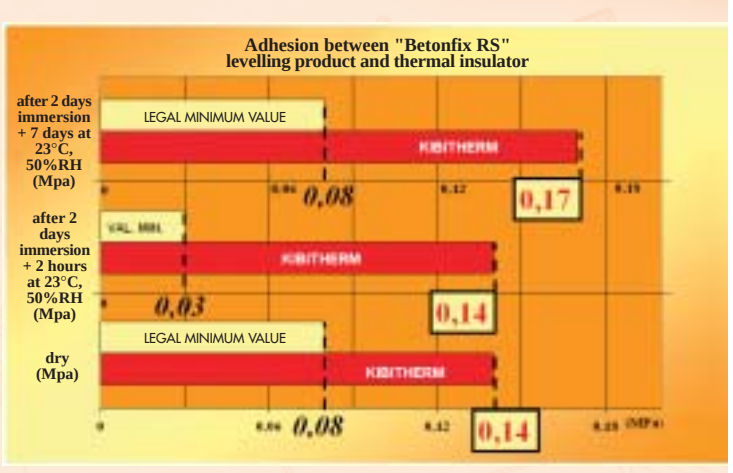


Difference in expansion between a 1 m EPS (expanded polystyrene) insulation panel and an XPS (extruded polystyrene) panel after a 20°C temperature change



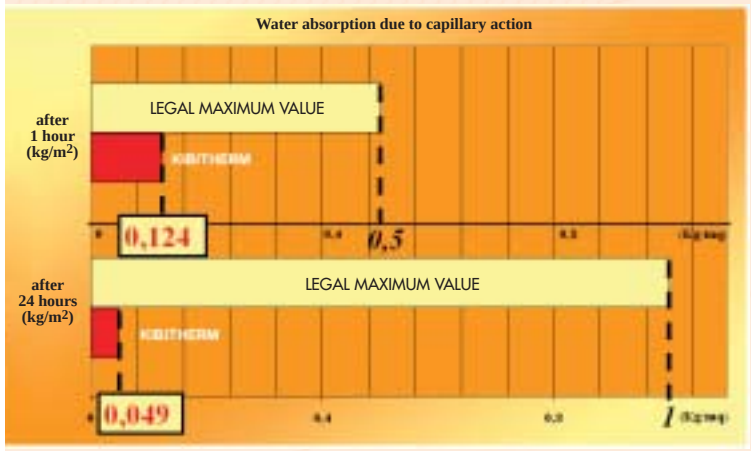




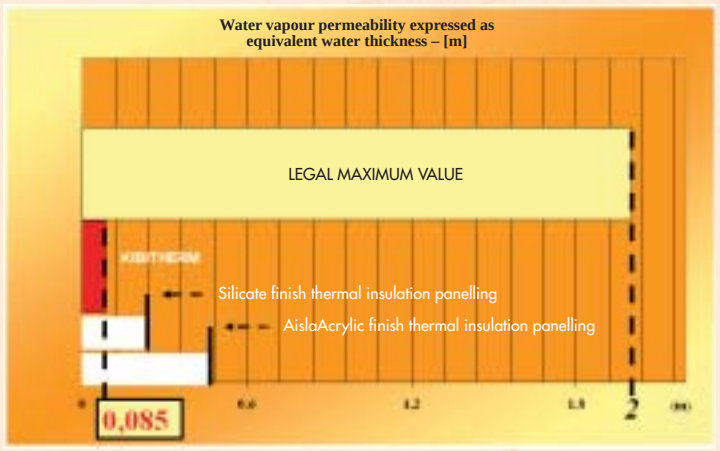


Adhesion

Application of KIBITHERM



Absorption



Permeability

How to apply KIBITHERM

Exposed clay brick or stone block walls

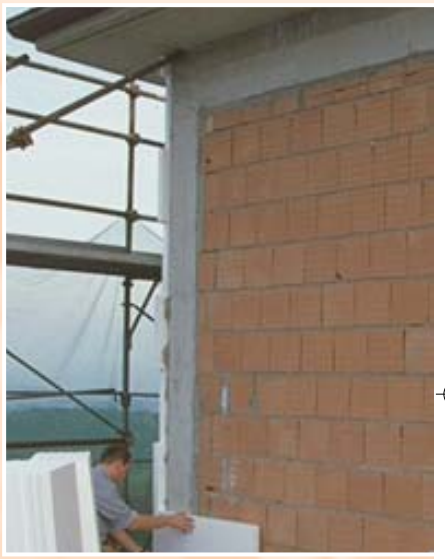
For brick and/or stone block walls that have not been rendered, check:
- the consistency of the substrate;
- planarity of the support.

As regards the consistency of the substrate, look for fragmented or separating parts, or the presence of surface dusting. Any fragmented and/or separating parts found should be removed. Before proceeding, apply Kimicover FIX consolidant primer to substrates showing signs of surface dusting. As regards the planarity of the support, check if the pointing between the clay tiles and/or stone blocks is curved excessively inward; if it is, it should be re-levelled using a pointing mortar with the right mechanical properties for the support. Moreover, if the wall is uneven due to the particular form of hewn stone or construction equipment used, it should be levelled by applying a render containing mortars that bond firmly with the substrate and of compatible mechanical properties.

Rendering on reinforced concrete frame and infill walls or to brickwork structure.

For existing buildings with rendered walls, check:
- the consistency of the render and presence of areas separating from the support;
- surface planarity.

As regards the consistency of the render, look for any areas that have separated from the support, or signs of surface dusting in otherwise solid areas. Any fragmented and/or separating parts found should be removed. After this, patch up problem areas with a levelling render made of mortars that will bond firmly to the substrate and of compatible mechanical properties. As regards planarity, extremely uneven surfaces should be levelled as explained above by applying a levelling render containing mortars that bond firmly with the substrate and of compatible mechanical properties. If the existing render is fragmented or painted, contact the Kimia Technical Support Service for assistance.



Concrete

For buildings with concrete walls, check:
- the surfaces are clean;
- for signs of surface deterioration of the concrete.

If there are traces of parting compounds, or oil or grease marks on the surface, remove them with a pressure washer (water at 120 atm.), using additives as required to get rid of the residues of parting compounds or greasy and/or oily substances.
If the concrete has deteriorated and the concrete cover is showing the first signs of separating from the embedded steel bar, it must first be repaired by:
- removing the weakened areas (it is recommended to check the depth of carbonation and get rid of any concrete that has already carbonized);
- cleaning the reinforcing bars by mechanical brushing or sand-blasting;
- protecting the reinforcing bars using a suitable passivating substance such as Betonfix KIMIFER which when applied to CONCRETE, acts as a binding layer for subsequent applications;
- repairing any missing parts using a compensated shrinkage mortar such as Betonfix FB;
- applying a levelling coat with Betonfix RS.

As regards planarity, extremely uneven surfaces should be levelled by applying a levelling render containing mortars that bond firmly with the substrate and of compatible mechanical properties.

Warning
If the support shows signs of damp due to capillary moisture rising, do not attach the insulating panelling and contact our technical support service for advice on the best solution to adopt. If the support is cracked, look for the relative cause. If the design engineer believes the cracks may widen or deepen over time, do not apply the KIBITHERM system.

How to prepare products

Fixing

The system uses Betonfix RS mortar as adhesive. To prepare, add one 25 kg bag of Betonfix RS mortar to 5-6 litres of water. Mix carefully with a low-rev mechanical stirring device (200-300 RPM) until perfectly smooth.

Laying insulation panel

Once the adhesive mixture is ready, apply it to the insulation panel, creating fixing points of 3.5-4.5 kg/m^2 depending on the planarity of the support. The panels should be placed edge to edge lengthwise with the joints overlapping vertically then pressed down with a float, checking the planarity of the panels regularly. On completion, use a screed to check the planarity of the entire surface. Additional mechanical anchorage using square plugs for panel systems (the length of which will depend on the thickness of the panels, and a total of 4 per m^2) should be added after 3-4 days. You are also recommended to wait until the adhesive fixing the panels to the wall has dried completely, especially if the surface is particularly uneven.

Preparing the base layer and laying the reinforcement

Once any additional components required are ready (corner and edge beading etc.), 3 to 4 days after attaching the insulation panels and depending on environmental humidity and temperature, the render undercoat can be applied using Betonfix RS levelling product. Mix Betonfix RS with water in the same ratios as indicated above for adhesion (25 kg of Betonfix RS in 5-6 litres of water). Mix with a low-rev mechanical stirring device (200-300 RPM) until perfectly smooth.

Spread evenly with a stainless steel smooth spreader to create an initial layer 1-2 mm thick and using 2-2.5 kg/m2. While the product is still wet, lay the reinforcing mesh being careful to fully embed it in the base layer by going over it again with the smooth spreader.

After the first layer has set, apply a second layer of Betonfix RS about 1-1.5 mm thick. At least 1-2 kg/m2 must be used for this second coat.

Lay the mesh vertically, overlapping each piece by 10 cm at the joints. Double the mesh if extra reinforcement is required.

Preparing the finish coat

The finish coat should only be applied once the support is completely dry, and free of dirt or loose parts. About 15-21 days after applying the levelling product, depending on the season, a coat of primer should be applied before the finish coat. Once the primer has dried (wait at least 24 hours), apply the selected finish coat following the manufacturer's instructions.

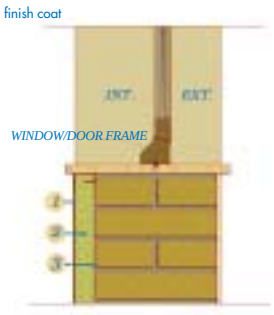
During application, make sure:

A. Base and undercoats are applied properly;
B. Waiting times between products are observed;
C. The correct overlaps are made in the reinforcement;
D. Adhesive, levelling and finish coats are applied properly.

Laying instructions for each part of the KIBITHERM system are given in detail in the application descriptions provided for each component.

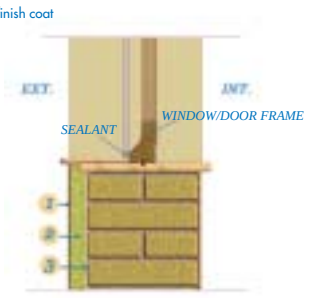
Application components

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



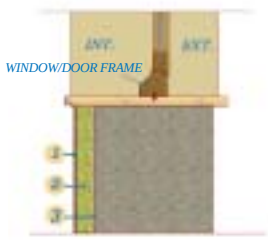
VERTICAL SECTION OF WINDOW OPENING

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



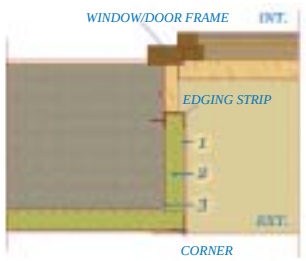
VERTICAL SECTION AT WINDOW SILL
WITH SOLEPLATE THAT IS TOO SHORT

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



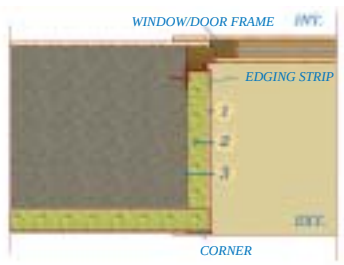
VERTICAL SECTION AT WINDOW SILL

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



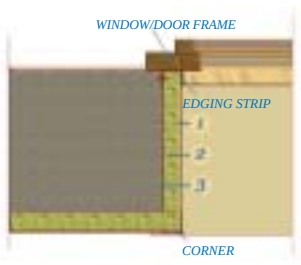
HORIZONTAL SECTION OF WINDOW OPENING
WITH ROLLER SHUTTER

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



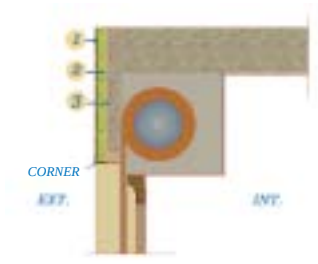
HORIZONTAL SECTION OF WINDOW OPENING
WITH ROLLER SHUTTER (new build)

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



HORIZONTAL SECTION OF WINDOW OPENING

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



VERTICAL SECTION AT ROLLER SHUTTER BOX

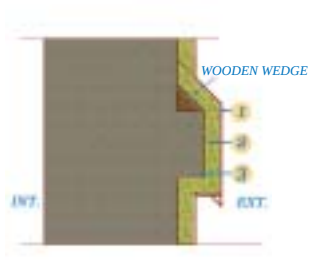
1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive

SECTION AT SHUTTER FASTENER

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive

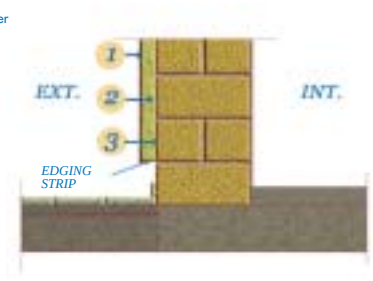
VERTICAL SECTION AT EXTERNAL CORNER

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



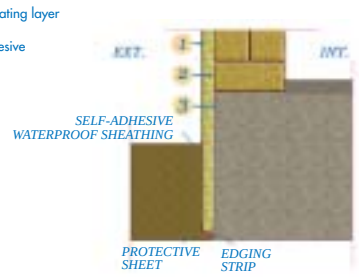
VERTICAL SECTION OF FRONT PROJECTING SECTION

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



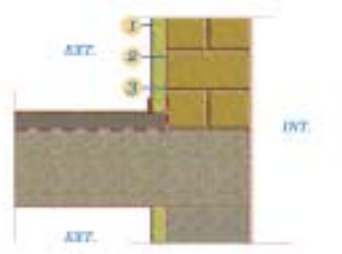
VERTICAL SECTION AT FOOT OF WALL

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



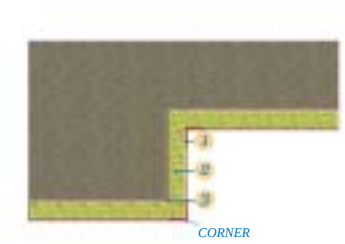
VERTICAL SECTION AT FOOT OF WALL IN UNDERGROUND PART

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive

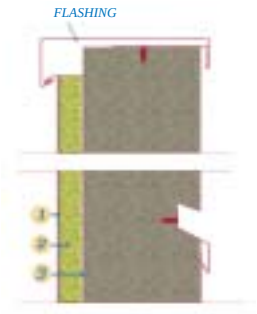


VERTICAL SECTION OF A ROOF TERRACE CORNER

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



HORIZONTAL SECTION OF AN INTERNAL AND AN EXTERNAL CORNER

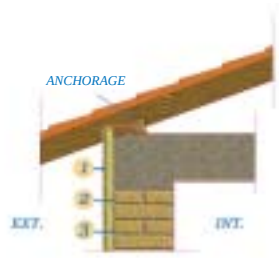


VERTICAL SECTION AT PARAPET WALL ON FLAT ROOF

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive

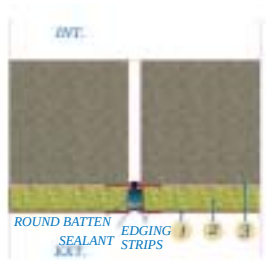
VERTICAL SECTION WHERE WALL MEETS PITCHED ROOF

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



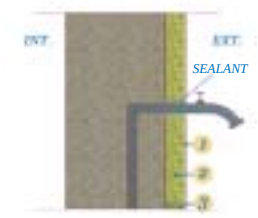
VERTICAL SECTION AT PARAPET WALL ON FLAT ROOF

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



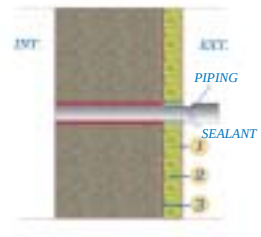
SECTION AT EXPANSION JOINT

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



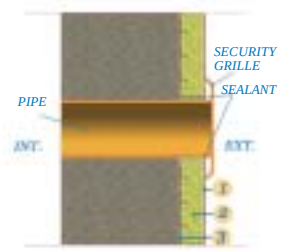
SECTION AT EXTERNAL TAP

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



SECTION AT PIPE

1 Levelling with mesh + finish coat
2 Insulating layer
3 Adhesive



SECTION AT AIR VENT