

WATERPROOFING OF TERRACES

PROBLEM

Moisture problems in the top floor apartments are a common phenomenon. Such problems are caused either because the terraces have no waterproofing layer or because the waterproofing layer is inappropriate (wrong materials, bad application, lack of preservation). Following, there are presented different ways of solving this problem according to its extent, the current condition of the terrace and its future usage.

LOCAL WATERPROOFING OF CRACKS, JOINTS AND CONJUNCTION POINTS

In many cases local waterproofing of cracks or conjunction joints between different materials is sufficient in order to solve the moisture problems of a terrace. This is the most economical solution of waterproofing.



Primarily, there are detected any cracks in the cement mortars, the mosaic or in the old waterproofing layer. Then, any dust or grease, are cleaned.



The surface should be dry. Then, the crack is primed along its length and in a width of 12 cm approximately, with the special primer **ISO-PRIMER**.



After the primer has dried, **ISOFLEX** or **ISOFLEX-T25** is applied locally with a brush.



The strips of glass mesh or polyester fabric are positioned while **ISOFLEX** or **ISOFLEX-T25** is still fresh.



After the first layer of **ISOFLEX** or **ISOFLEX-T25** has dried, two further layers are applied along the cracks.



Intersection of the terrace with the vertical structures (parapet, stairwell termination etc.) should be clean and dry. The surface is primed with **ISO-PRIMER**.



After the primer has dried, **ISOFLEX** or **ISOFLEX-T25** is applied along the intersection in a width of 12 cm approximately.



While the first layer of **ISOFLEX** or **ISOFLEX-T25** is still fresh, a glass mesh or polyester fabric strip is positioned from both sides of intersection.



Two further layers of **ISOFLEX** or **ISOFLEX-T25** are applied, each one only after the prior has completely dried.



Joints between terrace and the metallic elements (rain pipes, gutters etc), should be clean from dust and rust.



The dry surface is primed with **ISO-PRIMER** all around the joint.



After the primer has dried, **ISOFLEX** or **ISOFLEX-T25** is applied all around the joint, including the vertical element.



While the first layer of **ISOFLEX** or **ISOFLEX-T25** is still fresh, a glass mesh or polyester fabric strip is positioned.



Afterwards, two further layers of **ISOFLEX** or **ISOFLEX-T25** are applied to the joint.

MATERIALS

- **ISOFLEX** Brushable elastomeric liquid membrane (total consumption: 1.0-1.5 kg/m²)
- **ISOFLEX-T25** Brushable elastomeric liquid membrane (total consumption: 1.0-1.5 kg/m²)
- **ISO-PRIMER** Primer of ISOFLEX or ISOFLEX-T25 (consumption: 200-300 g/m²)
- **Polyester cloth (TREVIRA) or fiberglass mesh (width 10 cm)**, for reinforcing waterproofing layers

WATERPROOFING OF TERRACES WITH SLOPE (WITHOUT STANDING WATER)

It is very usual, terraces with mosaic or cement mortar grade to have moisture problems. Further down there are explained two different solutions: 1) Waterproofing of terraces with brushable elastomeric acrylic sealant ISOFLEX and ISOFLEX-T25, 2) Waterproofing of terraces with bituminous membranes covered with mineral chipping or aluminium leaf.

1st Solution: Waterproofing with the brushable elastomeric acrylic sealants ISOFLEX and ISOFLEX-T25.

For the reparation of the substrate it can be used the polymer-modified cement mortar **DUROCRET**. **ISOFLEX** or **ISOFLEX-T25** should be applied on a clean and dry substrate.



The terrace is primed with **ISO-PRIMER**.



After the primer has dried, a layer of **ISOFLEX** or **ISOFLEX-T25** is applied along the intersection of the terrace with vertical structures (parapet etc.) as well as along any cracks, tiles and joints between the terrace and any metallic element (rain pipes, gutters etc). While it's still fresh this layer is reinforced **with a glass mesh or polyester fabric strip of 10 cm width (TREVIRA)**.



Afterwards, a layer of **ISOFLEX** or **ISOFLEX-T25** is applied with a brush or roller. If it is necessary, **ISOFLEX** or **ISOFLEX-T25** is diluted 5% with water, in order to be applied easier.



A second coat of **ISOFLEX** or **ISOFLEX-T25** should be applied crosswise once the first one has dried and can be walked on.



The final result is a uniform, elastic and waterproofing membrane without joints or seams. The main advantage of **ISOFLEX** or **ISOFLEX-T25** is its durability to time due to its composition as a waterproofing material and not as a simple colour.
Recommendation:
In cases where the waterproofing layer should have high resistance to extreme temperature conditions (from -25°C to +120°C) then, instead of **ISOFLEX**, it is recommended the use of **ISOFLEX-T25**.

MATERIALS

- **ISOFLEX** Brushable elastomeric liquid membrane (total consumption: 1.0-1.5 kg/m²)
- **ISOFLEX-T25** Brushable elastomeric liquid membrane (total consumption: 1.0-1.5 kg/m²)
- **ISO-PRIMER** Primer of **ISOFLEX** or **ISOFLEX-T25** (consumption: 200-300 g/m²)
- **Polyester cloth (TREVIRA) or fiberglass mesh**, for reinforcing waterproofing layers

2nd Solution: Waterproofing of terraces with bituminous membranes covered with mineral chipping or aluminium leaf.



Any necessary repairs to the substrate should be carried out using the polymer-modified cement mortar **DUROCRET**. Bituminous membranes should be laid on a clean and dry substrate.



The terrace is primed with the bituminous emulsion **ISOPAST** (diluted 20-50% with water) or with the bituminous varnish **ISOLAC**.



After the primer has dried, the bituminous membranes are heated with a blowtorch and stuck to the surface by simple pressure, starting from the lower points and vertical to the gradients.



Adjacent membranes should overlap each other at a width of approx. 10 cm. The joints are sealed with a blowtorch and by being pressed with a trowel. Afterwards, **ISOFLEX** or **ISOFLEX-T25** is applied to all joints.



The extensions of membranes to the vertical surfaces (parapets, stairs, termination etc.), are sealed by heating with a blowtorch and then by being pressed with a trowel.



The gutters should be cleaned and then coated with **ISOFLEX** or **ISOFLEX-T25**, reinforced with polyester fabric strip (**TREVIRA**).



Joints between membrane and the metallic elements (rain pipes, banisters etc), are sealed with **ISOFLEX** or **ISOFLEX-T25**, reinforced with polyester fabric strip (**TREVIRA**).



Using bituminous membranes is an ideal solution for waterproofing, as long as the membranes are sealed carefully and the joints with other elements are especially treated. It is recommended bituminous membranes to be placed by professionals.

MATERIALS

- **ISOGUM P** Plastomeric bituminous membrane (APP) with mineral chipping
- **ISODIEN 4 PF ALU** Elastomeric bituminous membrane with aluminium leaf overlay
- **ISOPAST** Bituminous emulsion (consumption: 300-500 g/m²)
- **ISOLAC** Bituminous varnish (consumption: 250-300 g/m²)
- **ISOFLEX** Brushable elastomeric liquid membrane (total consumption: 1.0-1.5 kg/m²)
- **ISOFLEX-T25** Brushable elastomeric liquid membrane (total consumption: 1.0-1.5 kg/m²)
- **TREVIRA** Polyester cloth (width 10cm), for reinforcing waterproofing layers

● WATERPROOFING OF TERRACES WITHOUT SLOPE (WITH STANDING WATER)



Substrate should be thoroughly cleaned from any loose particles, grease, dust etc.



The substrate is dampened, without leaving any water puddles.

Corners like the joint of slab with vertical structures (parapet, stairwell termination etc), should be dampened and filled in with **DUROCRET** and rounded smooth with a cylindrical object (bottle etc.) in order to be formatted a curved groove.



The content of component A (mortar) is added into the liquid component B (elastifying agent) and the indicated water, under continuous stirring, until a uniform viscous mixture of **AQUAMAT-ELASTIC** is formed.



The first layer of **AQUAMAT-ELASTIC** is applied by brush, as wide as the reinforcement (1m). The slurry should be exceeded to the vertical structures (parapet etc) at least 15-20cm up.



While the layer of **AQUAMAT-ELASTIC** is still fresh, the reinforcing material (**TREVIRA**-1m width) is positioned and embodied.



After drying, the reinforced with **TREVIRA** first layer is covered by a second layer of **AQUAMAT-ELASTIC**.



A 3rd layer of white **AQUAMAT-ELASTIC** is applied crosswise and once the previous layer has dried. The thickness of each layer should not exceed the 1 mm.



The final layer of **AQUAMAT-ELASTIC** should be white in order to reduce the absorption of heat from the sun's rays and extend the life of the waterproofing.

MATERIALS

- **AQUAMAT-ELASTIC** Elastic, 2-component cement-based brushable sealing slurry (consumption: 1 kg/m²/layer)
- **TREVIRA** Polyester cloth for reinforcing waterproofing layers
- **DUROCRET** Polymer-modified cement mortar (consumption: 2-3 kg per meter of groove)

● WATERPROOFING OF TERRACES AND COVERING WITH TILES

Any necessary repairs to the gradient should be carried out with the polymer-modified cement mortar **DUROCRET**. If it is necessary to form sufficient cement mortar grade for the terrace, then it should be used the low weight mortar **SCREED-100**.

The next steps of waterproofing can be applied after 7 days.



Substrate should be thoroughly cleaned from any loose particles, grease, dust etc.



The substrate is dampened, without leaving any water puddles.



The content of component A (mortar) is added into the liquid component B (elastifying agent), under continuous stirring, until a uniform viscous mixture of **AQUAMAT-FLEX** is formed.



A layer of **AQUAMAT-FLEX** is applied locally, along intersections of terrace with vertical structures (parapet etc.), along possible cracks, tiles and joints between the terrace and any metallic elements (rain pipes, gutters etc). While it's still fresh this layer is reinforced with a **polyester fabric strip (TREVIRA - width 10cm)**. If it is necessary, a second layer of **AQUAMAT-FLEX** is applied, in order to achieve better embodiment of the reinforcement with **AQUAMAT-FLEX**.

After the local layer has dried, a layer of **AQUAMAT-FLEX** is applied with brush all over the roof surface.



A 2nd layer of **AQUAMAT-FLEX** is applied crosswise and once the previous layer has dried. The thickness of each layer should not exceed the 1 mm.



For the adhesion of tiles it is used the 2-component, elastic tile adhesive **Isomat AK-ELASTIC**.



The tile grout **MULTIFILL 3-15** should be reinforced with the polymer-based admixture **DS-99**.



AQUAMAT-FLEX and **Isomat AK-ELASTIC** constitute a perfect system for waterproofing-adhesion of tiles.

MATERIALS

- **AQUAMAT-FLEX** Flexible, 2-component cement-based brushable sealing slurry (consumption: 1kg/m²/layer.)
- **TREVIRA** Polyester cloth (width 10cm), for reinforcing waterproofing layers
- **Isomat AK-ELASTIC** 2-component, elastic tile adhesive (consumption: 1.5-4.0kg/m²)
- **MULTIFILL 3-15** Tile grout for width 3-15 mm
- **DS-99** Additive for tile adhesives and joint grouts

WATERPROOFING OF TERRACES AND AFTERWARDS THERMO-INSULATION (INVERTED ROOFS)

Any necessary repairs to the gradient should be carried out using the polymer-modified cement mortar **DUROCRET**. If it is necessary to form sufficient cement mortar grade for the terrace, then it should be used the low weight mortar **SCREED-100**. The next steps of waterproofing can be applied after 7 days.



Substrate should be thoroughly cleaned from any loose particles, grease, dust etc.



The substrate is dampened, without leaving any water puddles.



The content of component A (mortar) is added into the liquid component B (elastifying agent), under continuous stirring, until a uniform viscous mixture of **AQUAMAT-FLEX** is formed.



The first layer of **AQUAMAT-FLEX** is applied by brush, as wide as the reinforcement (1m). The slurry should be exceeded to the vertical structures (parapet etc) at least 15-20 cm up.



While the layer of **AQUAMAT-FLEX** is still fresh the reinforcing material (**TREVIRA - 1 m width**) is positioned and embodied.



AQUAMAT-FLEX is applied over the entire roof surface, in strips of 1 m.



The sheets of reinforcing material should be positioned in sequence so that they overlap each other by 10 cm.

After drying, the reinforced first layer is covered with a second layer of **AQUAMAT-FLEX**.



A third coat of **AQUAMAT-FLEX** should be applied crosswise once the previous one has dried. The thickness of each layer should not exceed the 1 mm.



On top of the waterproofing layer and after it has dried out, the extruded polystyrene boards are placed, fixed by their weight.



The polystyrene boards are covered with geotextile or plastic linoleum.



Finally, paving slabs or gravel (6-8 cm thick layer) are placed in order to protect the waterproofing and insulation layers from the sun and the wind. In this way we can also ensure that the terrace can be walked on.