termPIR®
insulation boards

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# termPIR® INSULATION BOARDS

## ETICS SYSTEM INSTALLATION INSTRUCTIONS


ETICS system installation instructions

# ESSENTIAL TOOLS

## 01. MEASUREMENTS AND DETERMINATIONS

retractable tape measure

spirit level

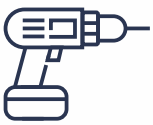
carpenter pencil

marker pen

punch

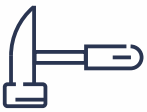
levelling rods or a ruler

## 02. MECHANICAL INSTALLATION



drill and electric screwdriver

set of drill bits



builder's hammer

## 03. CUTTING BOARDS TO SIZE

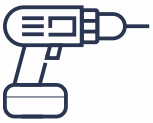
hand saw

chainsaw
or a circular saw

## 04. BONDING OF THE BOARDS

trowel

notched spreader



drill

adhesive
mixing blade

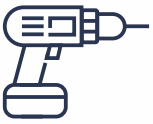
bucket

## 05. MESH INSTALLATION

retractable
utility knife

trowel

smooth spreader



drill

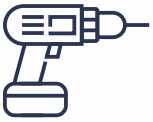
adhesive
mixing blade

bucket

## 06. FINISHING

trowel

smooth spreader



drill

brush
or paint roller

adhesive
mixing blade

bucket
or a paint tray

ETICS system installation instructions

# SUBSTRATE PREPARATION

## 01.RECOMMENDATIONS / REQUIREMENTS

It is recommended that prior to installing an ETICS thermal insulation system on a building:

- roofing work, joinery installation and the construction of substrates for balcony/ terrace finish layers should be completed
- parts of the building that can be accidentally exposed to soiling during facade works should be protected
- a method for façade finishing should be determined
- components to be covered up by the facade finish, such as systems and services should be made; the same applies to devices fixing other building finishing components directly to the walls

Prior to installing an ETICS thermal insulation system on a building it is necessary:

- to detail the horizontal surfaces of the walls designed to ensure that runoff water is discharged off the face of the facade
- to ensure that the substrate is dense, even, sound and dry
- to remove contamination that may reduce adhesion of the adhesive used, such as greasy spots, fine and coarse dust
- old loose plaster, scaling paint etc.
  - small irregularities and cavities should be refilled with Termo Organika TO-KS or TO-KU adhesive;
  -large cavities should be filled with a material that has comparable characteristics to those of the material the wall is made of.

## 02. COMMON DEFECTS

Listed below are the most common substrate defects that need to be repaired before installing termPIR® ETX boards.

Figure 1. Cavities to be filled with adhesive

Figure 2. Matter remaining after previous finish layers were removed

Figure 3. Peeling paint

Figure 4. Spots that may reduce adhesion of the adhesive

## 03. RECOMMENDED METHODS OF REPAIRING / IMPROVING LOAD-BEARING CAPACITY

If the defects referred to in the item above appear, substrate load-bearing capacity needs to be improved according to the procedure described below.


STAGE I. Mechanically removing old plasters and adhesives as well as peeling paint.

STAGE II Removing fine dust from the substrate

STAGE III. Making a levelling layer on a previously prepared substrate

# STAGE I: INSTALLATION OF A STARTER STRIP

The first stage involves installing a starter strip that facilitates subsequent panel installation. Install a strip horizontally at a predetermined height. Use nail plugs spaced ca. 50 cm apart. In the corners, fix the strip along the bisector of the angle formed by the walls.

STAGE I. a) Determining the position of a starter strip

STAGE I. b) Positioning and installing a starter strip

Figure 5. A properly installed starter strip

Figure 6. View of boards in place

# STAGE II: INSTALLATION OF THE FIRST ROW OF BOARDS

Use Termo Organika TO-KU universal adhesive to bond the boards to the substrate. Apply the adhesive along the perimeter and in addition apply 3-6 spots, evenly spread on the board surface.
Finally the adhesive should cover ca. 80% of the board surface area. Bond termPIR® ETX board to the wall pressing them lightly so that they are positioned vertically.

STAGE II. a) Distribution of adhesive on the board

**Attention:**
termPIR®insulation boards should be installed not earlier than **1 month** from the date of their manufacture (date production is placed on each package of termPIR® boards )

Install adjacent boards in such a way that their edges are flush with each other. Remove immediately any excess adhesive found outside the envelope of the board.

STAGE II. c) Installing and laying subsequent boards in the first row

Figure 7. View of a properly positioned interlocking joint

NOTE:
Ensure the boards are flush with each other. No faulting board edges can be corrected afterwards.

Alternatively, you can use a polyurethane adhesive to bond the boards, following the afore-mentioned procedure.

Figure 8. Distribution of polyurethane adhesive on the board

# STAGE III: INSTALLATION OF THE SECOND AND SUBSEQUENT PANEL ROWS

Install the subsequent board rows in the same way as the first row; remember that the board rows should be positioned relative to each other so that the vertical joints are staggered.

STAGE III a) Installing and positioning the second and third board rows

Figure 9. View of properly a positioned interlocking joint

Figure 10. View of subsequent board rows

NOTE:
Ensure the boards are flush with each other. No faulting board edges can be corrected afterwards.

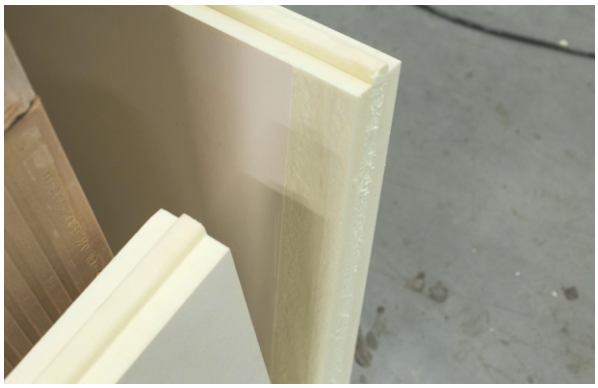
# STAGE III: INSTALLATION OF THE SECOND AND SUBSEQUENT PANEL ROWS

## BOARD INSTALLATION IN A CORNER

The installation of boards in a corner should be carried out according to the following diagram

a) Cutting the tongue of the interlocking joint.

b) Removing the facing from the board section joined with the face of the lateral one.



c) Installing corner boards

Figure 11. View of corner boards after installation

d) Removing the tongue of a corner board

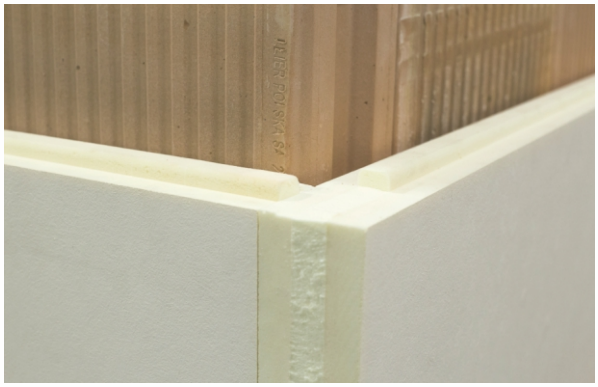


Figure 12. View of boards prepared for the installation of the next row

e) Installing plastic connectors preventing corners against deformation.

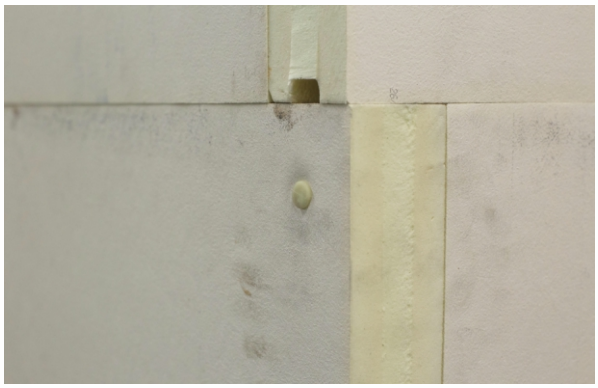
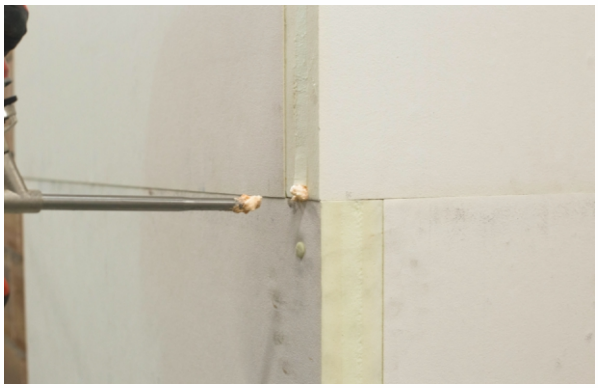


Figure 13. View of a component protecting a corner after installation

NOTE:

Corners should be protected against deformation as subsequent panel layers are laid.



f) Filling roof outlets with low pressure polyurethane foam.

# STAGE IV: ANCHORING

Do not start anchoring until after at least two days from the bonding of termPIR ETX boards. The mechanical fasteners used need to be specially selected to match the substrate type and to be consistent with the design of the insulation system. It is recommended to use dedicated screw anchors included in Gór-Stal's product range. Use more fasteners in edge areas to take account of additional load on the facade finish, such as wind suction.
In order to avoid thermal bridges and the so-called "ladybird effect" anchor screw sleeves should be driven to sufficient depth in the termPIR® ETX boards and should be covered with caps cut out of a styrofoam sheet (such caps are also available commercially) or out of termPIR® board.

STAGE IV a) Drilling a hole in the wall for an anchor screw sleeve

STAGE IV b) Making an opening in a board for an anchor screw sleeve

STAGE IV c) Installing an anchor screw sleeve.

STAGE IV d) Installing an anchor screw pin

Figure 14. View of an anchor screw after installation

STAGE IV e) Installing a cap

Figure 15. View of a cap after installation

Alternatively you can install anchor screws using a dedicated tool for driving them into an insulation layer.

STAGE IV a) Drilling a hole in the wall for an anchor screw sleeve

STAGE IV b) Embedding an anchor screw

STAGE IV c) Driving an anchor screw into an insulation layer.

Figure 16. View of an anchor screw after installation

# STAGE V: INSTALLATION OF MESH AND SURFACE PREPARATION FOR A FINISH LAYER

Prior to mesh installation, fill gaps of 3 mm in width and more between panels with low pressure polyurethane foam.

STAGE V a) Filling gaps with low pressure polyurethane foam.

## V.1. MESH INSTALLATION IN CORNERS

Do not start bonding reinforcing mesh until after at least two days from the bonding of termPIR ETX boards. It is recommended to start mesh installation at corners which should first be covered with a layer Termo Organika TO-KU universla adhesive or Termo Organika TO-KU white universal adhesive; next the mesh should be embedded in the adhesive. When embedded, mesh should be tight. Apply the adhesive using a plastering trowel and a flat trowel. To facilitate the work, you can use pre-made corners, adequately shaped during the production process.

STAGE V b) Applying a layer of adhesive in a corner

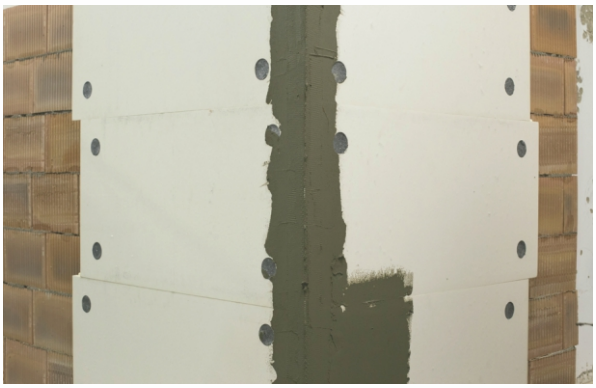
STAGE V c) Installation of a pre-made corner

## V.2. MESH INSTALLATION AROUND OPENINGS

Mesh is installed around openings in the same way it is installed in corners. You can also use pre-made corners. Install additional mesh strips around the corners of the openings; the strips will absorb stresses concentrating in the area.

## V.3. MESH INSTALLATION ON A FLAT WALL

The next step is to install mesh on the entire wall, with recommended overlap of 10 cm. Given the much larger area for processing than before, take into account the workability of the adhesive. Ensure that you use up the prepared amount of adhesive before its working life, as indicated by the manufacturer, expires.



STAGE V d) Applying a layer of adhesive on the wall


STAGE V e) Installing reinforcing mesh

## V.4. APPLYING A SECOND LAYER OF ADHESIVE (BRUSHING THE MESH)

At the end this stage you need to apply another layer of adhesive to the mesh or "brush" it.
This is done in the same way as in the case of adhesive application during mesh installation. Ensure that the mesh does not protrude from the adhesive layer and that there are no large uneven areas on the layer surface as this can hamper the installation of a finish layer.

## STAGE VI: INSTALLATION FO A FINISH LAYER

Once the reinforcing layer has dried completely (at least 3 days), you can start installing a finish layer. For each type of render, surface, render and ambient temperature should be above +5˚C both during the installation process and the next few days.

. If installing ® termPIR insulation systems, it is not obligatory to paint the facade finish. Painting is especially recommended when you want to renovate dirty surfaces. A method that is also often used involves installing a surface facade layer using Termo Organika TO-TM mineral and polymer render and painting it. To achieve the desired facade colour finish, you can either prepare thin-coat render with the desired colour or paint white render with paint of the desired colour. Do not start painting until after: ca. 3 days – in the case of thin-coat renders, if temperature during render application and drying is at least +15˚C; ca. 7 - 14 days – in the case of thin-coat renders, if temperature during render application and drying is less than +15˚C (the lower the application and drying temperature, the longer the interval); ca. 14 days – Portland cement plaster and traditional stucco; ca. 28 days – for concrete, with the manufacturer's painting instructions being followed.

STAGE VI a) Priming of the reinforcing layer

Figure 17. View of reinforcing layer after primer application

STAGE VI b) Installation of a finish layer

Figure 18. View of a completed finish layer

# FINAL REMARKS

## SYSTEM STRUCTURE:

The termPIR® insulation system consists of the following components:
MATERIALS FOR THERMAL INSULATION:
- **termPIR® ETX** insulation panels with glass fibre fleece, manufactured by GÓR-STAL ®

THE OTHER COMPONENTS:
Adhesives for termPIR® insulation panels
- **Termo Organika® TO-KU** universal adhesive for styrofoam, and for embedding mesh

Adhesives for embedding mesh:
- **Termo Organika® TO-KU** universal adhesive for styrofoam, and for embedding mesh
- **Termo Organika® TO-KUB** white universal adhesive for styrofoam, and for embedding mesh

Renders:
- Gold **Termo Organika® TO-TSG** silicone render
- Silver **Termo Organika® TO-TSS** silicone render
- **Termo Organika® TO-TSA** silicone and acrylic (siloxane) render
- **Termo Organika® TO-TSISI** silicone and silicate render
- **Termo Organika® TO-TP** polysilicate render
- **Termo Organika® TO-TA** acrylic render
- **Termo Organika® TO-TM** mineral and polymer render
- **Termo Organika® TO-TD** mosaic (decorative) render

Renders intended for mechanical application:
- Gold **Termo Organika® TO-TSGm** silicone render
- Silver **Termo Organika® TO-TSSm** silicone render
- **Termo Organika® TO-TSAm** silicone and acrylic (siloxane) render
- **Termo Organika® TO-TSISIm** silicone and silicate render
- **Termo Organika® TO-TPm** polysilicate render
- **Termo Organika® TO-TAm** acrylic render

Paints:
- Gold **Termo Organika® TO-FSG** silicone paint
- Silver **Termo Organika® TO-FSS** silicone paint
- **Termo Organika® TO-FSA** silicone and acrylic (siloxane) paint
- **Termo Organika® TO-FSISI** silicone and silicate paint
- **Termo Organika® TO-FP** polysilicate paint
- **Termo Organika® TO-FA** acrylic paint

Primers:
- **Termo Organika® TO-GU** universal primer
- **Termo Organika® TO-GS** contact primer
- **Termo Organika® TO-GP** polysilicate primer

Supplementary materials and accessories:
- **Termo Organika® TO-S170** mesh
- **Termo Organika® TO-S145** mesh
- Mechanical fasteners covered by an ETA in accordance with ETAG014
- Polyurethane foam
- end caps made of graphite styrofoam Ø 67 mm

Although the use of starter strips is not required, it facilitates proper levelling of the first panel layer. However, starter strips should always be used if you do not plan to provide thermal insulation for foundation walls. Where the foundation walls have been provided with thermal insulation, subsequent layers of thermal insulation above ground level are installed without a starter strip, with insulation continuity preserved.

Depth to which anchor screws should be inserted in the substrate should be as a minimum: 5-6 cm in concrete, cement blocks, solid clay bricks and calcium-silicate bricks, and 8-9 cm in aerated concrete, expanded clay aggregate concrete, hollow masonry units.

Do not fill gaps with TO-KS, TO-KU or TO-KUB adhesives or with other mortars

In order to facilitate positioning boards in a corner, you can use plastic pins available from Gór-Stal.

termPIR®
insulation boards

GÓR-STAL®
SANDWICH PANELS

## CONTACT INFORMATION

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