termPIR®
insulation boards

Insulation boards from Gór-Stal

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.

Photo 01. Cavities to be filled with adhesive.

Photo 02. Matter remaining after previous finish layers were removed.

Photo 03. Peeling paint.

Photo 04. 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.

ETICS system installation instructions

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.

Photo 05. A properly installed starter strip.

Photo 06. View of boards in place.

ETICS system installation instructions

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.

Photo 07. 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.

Photo 08. 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.

Photo 09. View of properly a positioned interlocking joint.

Photo 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 BOARD 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.

Photo 11. View of corner boards after installation.

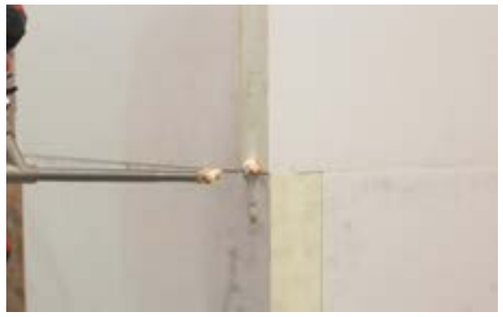
d) Removing the tongue of a corner board.

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

e) Installing plastic connectors preventing corners against deformation.

Photo 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.

Use connectors with a metal pin with a plastic head or with a reinforced plastic pin. The pin board should have a diameter of at least 60 mm and its surface needs to be rough with holes to ensure adhesion of the adhesive mortar. In order to avoid the formation of thermal bridges and so-called ladybird effect, boards should be properly immersed in the termPIR panel and covered with plugs cut from gray polystyrene (available commercially) or from termPIR panel. In the edge zone, it is recommended to use more fasteners due to additional factors that impair adhesion, such as wind suction. The recommended number of connectors is shown in table.

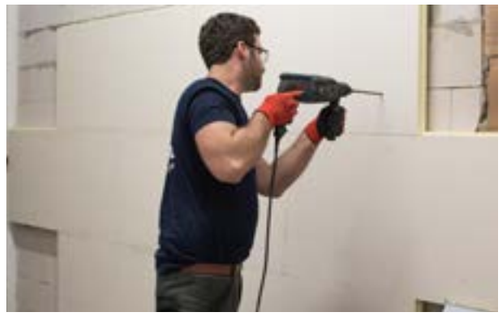
Recommended minimum number of connectors

Building height	Number of connectors, pcs./m²	
	wall	Edge zone
up to 12 m	4	6
12 ÷20 m	6	8
over 20 m	8	12

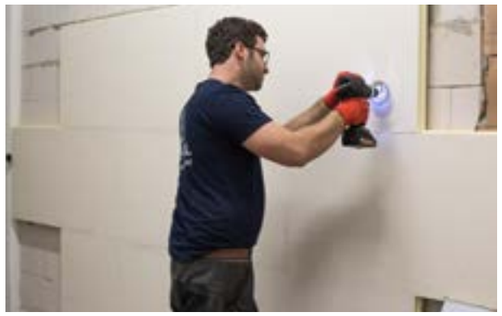
Depending on building shape, the edge zone is 1 to 2 m.

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 sucient 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.

Photo 14. View of an anchor screw after installation.

Stage IV e) Installing a cap.

Photo 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.

Photo 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 boards 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.

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 OF 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.

Photo 17.) View of reinforcing layer after primer application.

Stage VI b) Installation of a finish layer.

Photo 18. View of a completed finish layer.

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FINAL REMARKS

SYSTEM STRUCTURE:

The termPIR® insulation system consists of the following components:

Materials for thermal insulation:
- O termPIR® ETX insulation boards with glass fibre fleece, manufactured by GÓR-STAL

the other components:
- O Adhesives for termPIR® insulation boards
- O Termo Organika® TO-KU universal adhesive for styrofoam, and for embedding mesh

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

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

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

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

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

Supplementary materials and accessories:
- O Termo Organika® TO-S170 mesh
- O Termo Organika® TO-S145 mesh
- O Mechanical fasteners covered by an ETA in accordance with ETAG014
- O Polyurethane foam
- O 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 board 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

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