

## INSTRUCTION FOR THE SYSTEM APPLICATION

***ETICS MAJSTER-POL  
MAJSTER-POL MINERAL  
MAJSTERPOL NATURAL***



SECURITY



PROTECTION



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## 1. Information about the MAJSTER-POL insulation systems

**ETICS MAJSTER-POL**, **MAJSTER-POL MINERAL** and **MAJSTER-POL NATURAL** systems for insulating external walls constitute a layered system including thermal insulation panels, reinforced layer made of adhesive mortar and fibreglass mesh finished with ready-made plastering mortars.

**ETICS MAJSTER-POL**, **MAJSTER-POL MINERAL** and **MAJSTER-POL NATURAL** systems can be attached to the substrate only by means of adhesive mortar or adhesive mortar together with additional mechanical connectors.

**ETICS MAJSTER-POL** system has the European Technical Assessment ETA-11/0183.

**MAJSTER-POL MINERAL** system has the European Technical Assessment ETA 14/0238. **MAJSTER-POL NATURAL** system has the European Technical Assessment ETA 16/0861.

These **ETICS** insulation systems are intended for use as an external wall insulation for new and older buildings made of masonry (brick, block, stone) or concrete (molded on the construction site or in the form of prefabricated panels) elements with reaction to fire class B-s1, d0 (**ETICS MAJSTER-POL**, **MAJSTER-POL NATURAL**) or A2-s1, d0 (**MAJSTER-POL MINERAL**) according to EN 13501-1. It can be also used on horizontal or oblique surfaces which are not exposed to direct weather conditions.

**ETICS MAJSTER-POL**, **MAJSTER-POL MINERAL** and **MAJSTER-POL NATURAL** insulation systems should be applied in accordance with:

- technical documentation developed for a given object, specifying the substrate preparation, insulation panels thickness, type, number and arrangement of the mechanical connectors, ways of finishing specific places of the elevation, i.e. windows, doors, jambs, balconies, socles, dilatation,
- provisions of European Technical Assessment ETA-11/0183 (**ETICS MAJSTER-POL**), provisions of European Technical Assessment ETA 14/0238 (**MAJSTER-POL MINERAL**) or provisions of European Technical Assessment ETA 16/0861 (**MAJSTER-POL NATURAL**)
- this detailed instruction of performing the insulation,
- ITB instruction no 447/2009,
- technical regulations and the law currently in force in the country concerned, in particular in the field of insulation of building partitions, power requirements, safety and fire protection.

Construction works connected with the application of **ETICS MAJSTER-POL**, **MAJSTER-POL MINERAL** and **MAJSTER-POL NATURAL** insulation systems should be performed by professionals legitimised by Authorized Contractor Certificate which confirms knowledge of the system and guarantees proper quality of performed insulation works. The certificate is issued for a period of 1 year. **ETICS MAJSTER-POL**, **MAJSTER-POL MINERAL** and **MAJSTER-POL NATURAL** insulation systems fulfils the tasks of the required thermal insulation, provided that the insulation works are performed properly.

Only materials defined in the system should be used in order to perform **ETICS MAJSTER-POL**, **MAJSTER-POL MINERAL** and **MAJSTER-POL NATURAL** insulation systems. Replacement of materials specified in the system is not permitted.

The works this instruction refers to include all steps which enable and aim at performing thermal insulation of buildings along with colouring of the façade. The contractor is responsible for the quality of the works and for the conformity with the project documentation and instructions of the Building Control Inspector. All works should be performed according to this document as well as the instructions and work order specified in the building project or given by the Building Control Inspector. The contractor performing the insulation works is subject to the provisions of the construction law. Prior to the commencement of the works the following actions should be undertaken:

- the insulation works project should be developed, in case of both new buildings and restoration works. The project should provide for the attachment of façade elements in a way that does not involve the formation of thermal bridges essential for the functioning of the system,
- elaborating a health and safety plan and ensuring a proper organization of the construction site,
- completing all of the works of raw state, walling up and filling in perforations, furrows and cavities,
- performing the whole range of roofing works, assembling windows and doors on the façade, ducts and connections on the surfaces intended for the implementation of the insulation, mounting external window sills,
- securing all surfaces not intended to be covered such as woodwork, glass, wooden linings and elements, metal elements, horizontal surfaces of firewalls, cornices, attics, and other similar elements, performing appropriate processing to ensure the drainage of rainwater outside the face of the façade taking into account the total thickness of the insulation layer,
- performing works affecting humidity of the substrate, primarily internal plasters and floors,
- providing space for proper storage of all elements of the system in a way that prevents their moisture and exposure to too low (below +5°C) or too high (above +25°C) temperatures.

MAJSTER-POL systems differ in terms of insulation material (mineral wool or styrofoam) and materials used in the decorative layer.

## 2. Scheme of building insulation by means of ETICS MAJSTER-POL system with styrofoam

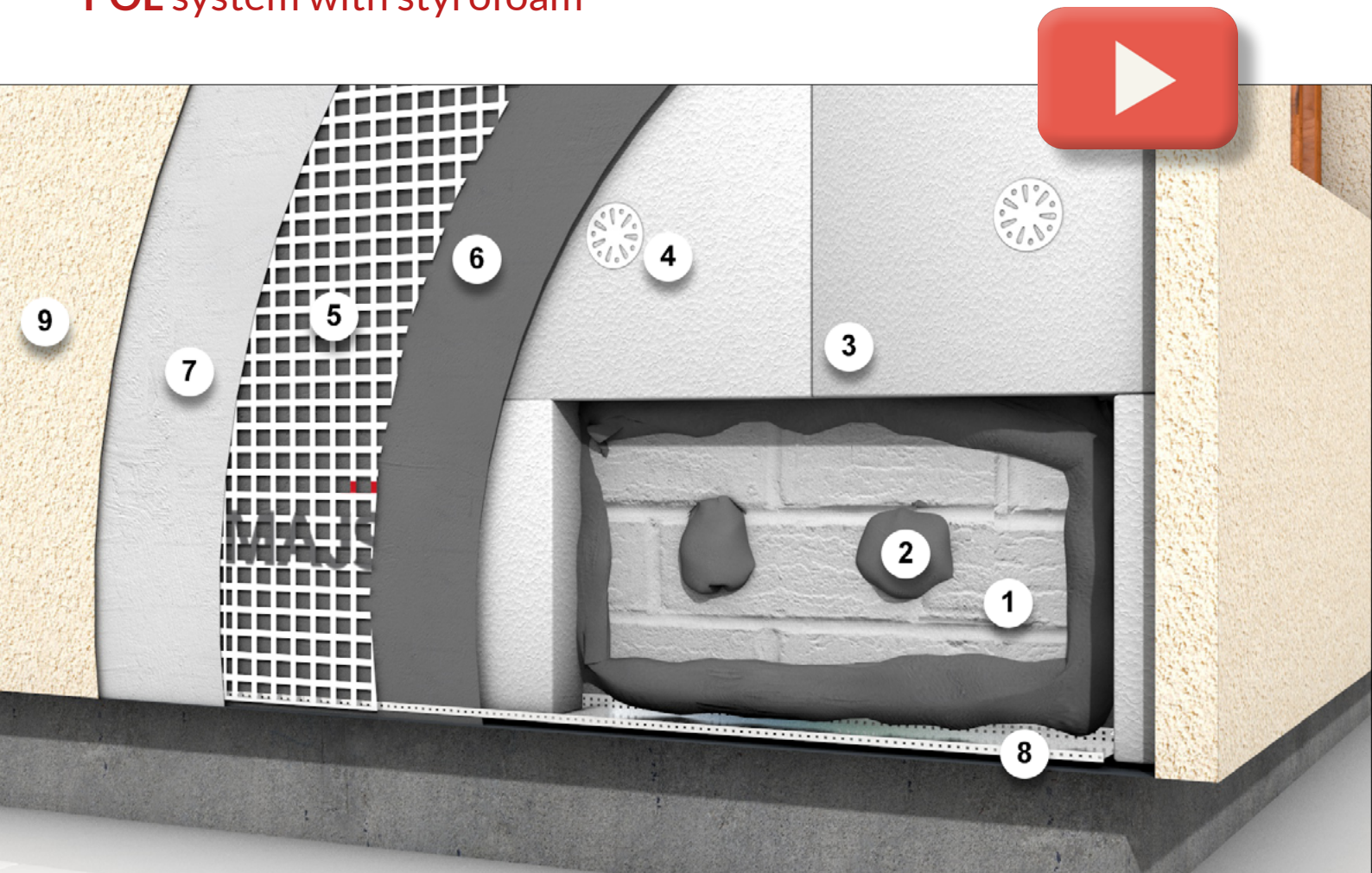


Fig. 2-1. Cross section of layers of ETICS MAJSTER-POL building insulation system with styrofoam.

1. Substrate
2. Styrolep K adhesive mortar
3. Styrofoam panel
4. Mechanical connector
5. Fibreglass mesh
6. Styrolep Z adhesive mortar
7. MAJSTERGRUNT UNDER-PLASTER (depending on the type of plaster)
8. Board lath
9. Plaster coating

Only the following elements can be part of **ETICS MAJSTER-POL** system:

- STYROLEP K adhesive mortar intended for adhesion of styrofoam panels
- thermal insulation layer (expanded polystyrene panels EPS 70, E class of reaction to fire, 50-250 mm thickness, in accordance with PN-EN 13163)
- mechanical connectors (if specified in the insulation project)
  - Ejotherm STR U in accordance with ETA -04/0023
  - Ejotherm STU in accordance with ETA -02/0018
  - Ejotherm NT U in accordance with ETA -05/0009
  - Ejotherm NTK U in accordance with ETA -07/0026
  - EJOT SDM -T plus in accordance with ETA -04/0064
  - KOELNER KI 8M in accordance with ETA -06/0191
  - WKRET -MET LFN 10, LFM 10 in accordance with ETA -06/0105
  - WKRET -MET LFN 8, LFM 8 in accordance with ETA -06/0080
- STYROLEP Z adhesive mortar for embedding mesh
- fibreglass mesh AKE 145 A VERTEX (Vertex R 117 A101) or TEXTILGLAS TG -22
- under-plaster primer coating
  - MajsterGrunt Acrylic Underplaster primer for mineral, acrylic and mosaic plaster
  - MajsterGrunt Under-Plaster Silicate Primer for silicate plaster
  - MajsterGrunt Under-Plaster Silicone Primer for silicone plaste
- plaster mass: MAJSTERTYNK ACRYLIC PLASTER, MAJSTERTYNK SILICONE PLASTER, MAJSTERTYNK SILICATE PLASTER, MAJSTERTYNK MOSAIC PLASTER, MAJSTERTYNK MINERAL PLASTER painted with the following paints: MAJSTERFARBA ACRYLIC PAINT, MAJSTERFARBA SILICONE PAINT, MAJSTERFARBA SILICATE PAIN
- Special profiles:
  - Stainless steel angle brackets with reinforcing mesh
  - Expansion joint profiles
  - Edging slats
  - Skirting (starting) profiles
- sealing foam and tapes
  - Low-pressure polyurethane foam and expansion tapes made of elastic bituminous polyurethane foam



### 3. Scheme of building insulation by means of MAJSTER-POL MINERAL system with mineral wool

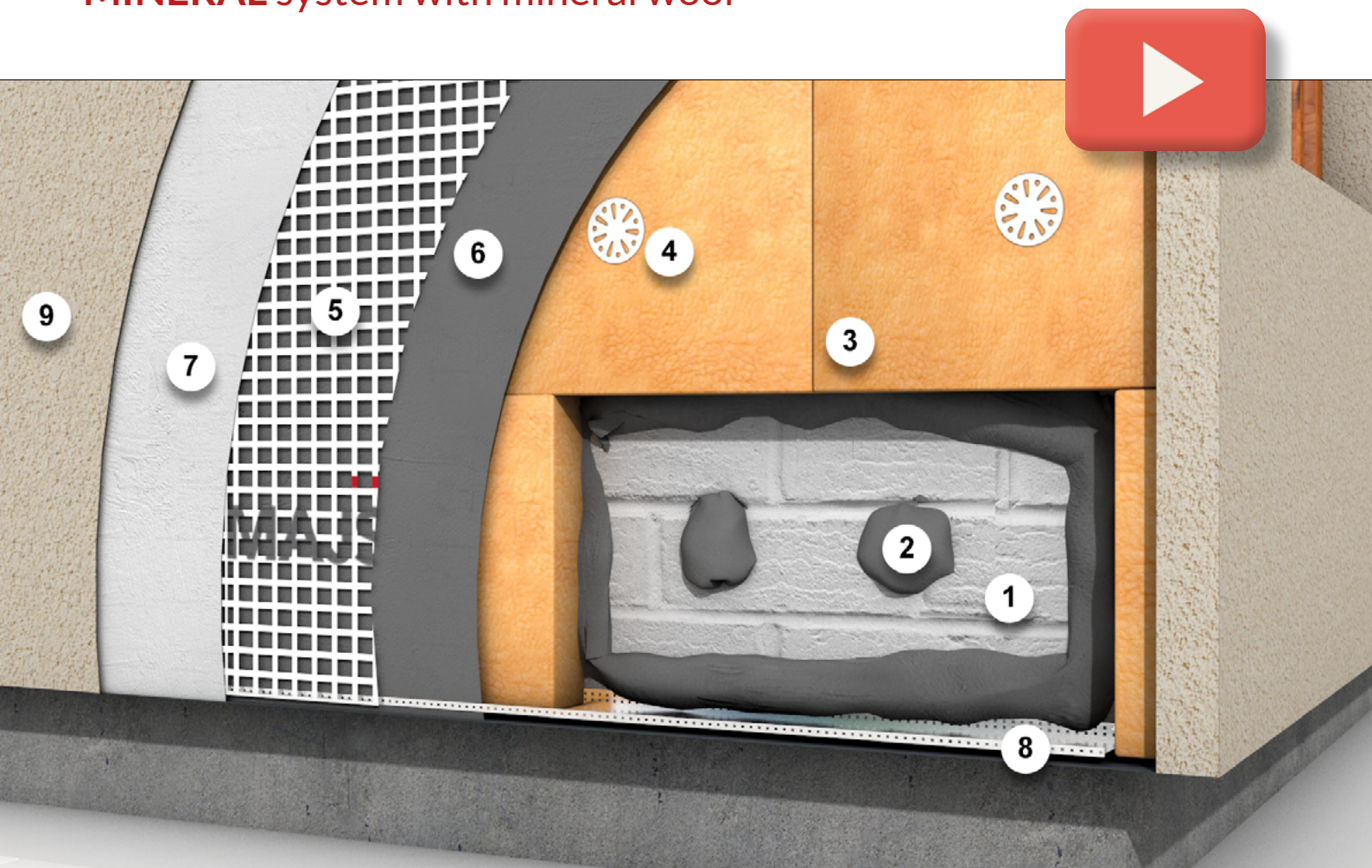


Fig. 3-1. Cross section of layers of MAJSTER-POL MINERAL building insulation system with mineral wool

1. Substrate
2. WEŁNOLEP K adhesive mortar
3. Mineral wool
4. Mechanical connector
5. Fibreglass mesh
6. WEŁNOLEP Z adhesive mortar
7. MAJSTERGRUNT UNDER-PLASTER (depending on the type of plaster)
8. Board lath
9. Plaster coating

Only the following elements can be part of MAJSTER-POL MINERAL system:

- WEŁNOLEP K adhesive mortar intended for adhesion of mineral wool panels
- thermal insulation layer (mineral wool panels MW (TR 15 OR TR 80) in accordance with PN-EN 13162
- mechanical connectors (if specified in the insulation project)
  - EJOTHERM STR U, STR U 2G in accordance with ETA – 04/0023
  - EJOTHERM NT U in accordance with ETA – 05/0009
  - EJOT SDM-T PLUS in accordance with ETA – 04/0064
  - EJOT H1 ECO in accordance with ETA – 11/0192
  - KOELNER TFIX-8S, 8M in accordance with ETA – 11/0144
  - WKREĆ- MET WKTHERM 8 in accordance with ETA – 11/0232
  - FISCHER TERMOZ SV in accordance with ETA – 06/0180
  - FIXPLUG Ø8, Ø10 in accordance with ETA – 11/0231
  - BRAVOLL PTH-KZ 60/8-La, PTH-KZL 60/8-La, PTH 60/8-La, PTH-L 60/8-La in accordance with ETA-05/0055
  - BRAVOLL, PTS-S 60/8-La, PTH-SL 60/8-La in accordance with ETA-08/0267
  - BRAVOLL PTH-SX in accordance with ETA-10/0028
  - BRAVOLL PTH-X, PTH-EX in accordance with ETA-13/0951
- WEŁNOLEP Z adhesive mortar for embedding mesh
- fibreglass mesh AKE 145 A VERTEX (Vertex R 117 A101) or TEXTILGLAS TG -22
- under-plaster primer coating
  - MajsterGrunt Acrylic Underplaster primer for mineral, acrylic and mosaic plaster
  - MajsterGrunt Under-Plaster Silicate Primer for silicate plaster
  - MajsterGrunt Under-Plaster Silicone Primer for silicone, si-si plaster
- plaster mass: MAJSTERTYNK ACRYLIC PLASTER, MAJSTERTYNK SILICONE PLASTER, MAJSTERTYNK SILICATE PLASTER, MAJSTERTYNK MOSAIC PLASTER, MAJSTERTYNK SI-SI PLASTER, MAJSTERTYNK MINERAL PLASTER painted with the following paints: MAJSTERFARBA ACRYLIC PAINT, MAJSTERFARBA SILICONE PAINT, MAJSTERFARBA SILICATE PAINT, MAJSTERFARBA SI-SI PAINT
- Special profiles:
  - Stainless steel angle brackets with reinforcing mesh
  - Expansion joint profiles
  - Edging slats
  - Skirting (starting) profiles
- sealing foam and tapes
  - Low-pressure polyurethane foam and expansion tapes made of elastic bituminous polyurethane foam



4. Scheme of building insulation by means of **MAJSTER-POL NATURAL** system with styrofoam

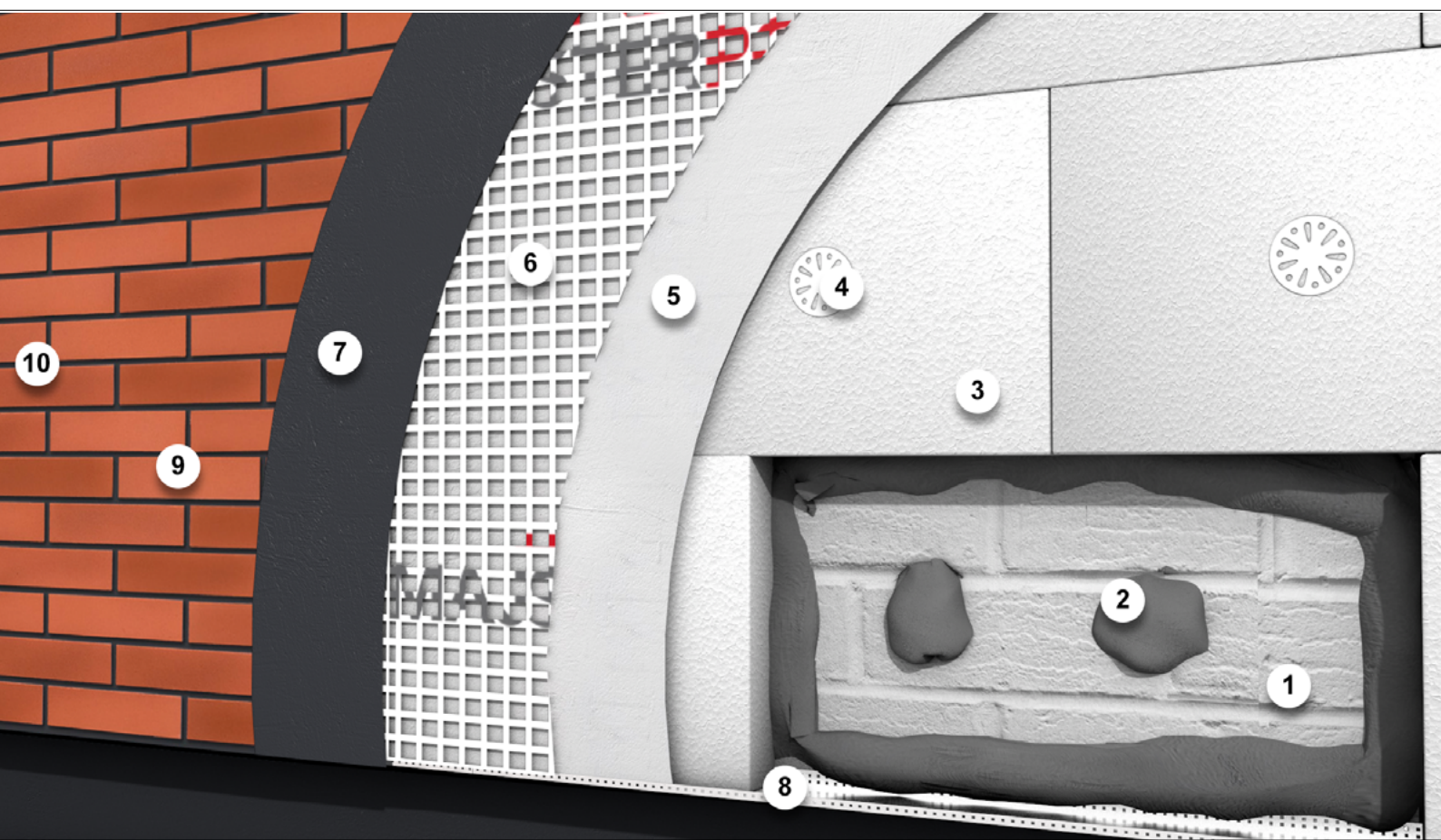


Fig. 4-1. Cross section of layers of MAJSTER-POL NATURAL building insulation system with styrofoam

- 1. Substrate
- 2. Styrolep K adhesive mortar
- 3. Styrofoam panel
- 4. Mechanical connector
- 5. Styrolep Z adhesive mortar or Styrolep Z White
- 6. Fibreglass mesh
- 7. MAJSTERGRUNT UNDER-PLASTER SILICONE PRIMER (for MASTER POLI plaster) or MASTER BRICK GROUND (for MASTER BRICK plaster)
- 8. Board lath
- 9. MASTER BRICK or MASTER POLI plaster coating
- 10. MASTER TONE lacquer (for MASTER BRICK plaster)

Only the following elements can be part of **MAJSTER-POL NATURAL** system:

- STYROLEP K adhesive mortar intended for adhesion of styrofoam panels
- thermal insulation layer (expanded polystyrene panels EPS 70, E class of reaction to fire, 50-250 mm thickness, in accordance with PN-EN 13163)
- mechanical connectors (if specified in the insulation project)
  - Ejotherm STR U in accordance with ETA -04/0023
  - Ejotherm STU in accordance with ETA -02/0018
  - Ejotherm NT U in accordance with ETA -05/0009
  - Ejotherm NTK U in accordance with ETA -07/0026
  - EJOT SDM -T plus in accordance with ETA -04/0064
  - KOELNER KI 8M in accordance with ETA -06/0191
  - WKRET -MET LFN 10, LFM 10 in accordance with ETA -06/0105
  - WKRET -MET LFN 8, LFM 8 in accordance with ETA -06/0080
- STYROLEP Z or STYROLEP Z White adhesive mortar for embedding mesh
- fibreglass mesh AKE 145 A VERTEX (Vertex R 117 A101) or TEXTILGLAS TG -22
- under-plaster primer coating
  - MajsterGrunt Under-Plaster Silicone Primer for MASTER POLI plaster
  - MASTER BRICK GROUND for MASTER BRICK plaster
- plastering mass: MASTER POLI, MASTER BRICK
- Special profiles:
  - Stainless steel angle brackets with reinforcing mesh
  - Expansion joint profiles
  - Edging slats
  - Skirting (starting) profiles
- sealing foam and tapes
  - Low-pressure polyurethane foam and expansion tapes made of elastic bituminous polyurethane foam

## 5. Technologies of implementing MAJSTER-POL insulation systems

### » 5.1 Substrate preparation

Prior to the commencement of the works the assessment of the substrate should be performed including cleanliness, humidity, hardness, water absorption and evenness.

Wear resistance test – assessment of the degree of dust, spilling of surface or the presence of efflorescence residues by means of hand or black hard fabric.

Scraping resistance test – cross-cutting, removing the surface or the assessment of substrate content and load bearing capacity as well as adhesive friction of existing coatings – performed by means of a chisel.

Wetting test – the assessment of substrate absorbency by means of a wet brush or sprayer.

Evenness and smoothness test – the assessment of the level of deviation of the wall from the surface and from the vertical by means of a patch (usually 2m).

Prior to the commencement of insulation works, the substrate should be properly prepared. It should be stable and even, should have sufficient load bearing capacity and should be free from contamination (such as dust or grease) which reduces the adhesiveness of the adhesive mortar. In the case of thermal modernization of plastered walls the adhesion of the existing plaster should be checked by tapping. A dull sound indicates that the plaster has loosened from the substrate and should be removed. Plaster covering external surfaces of window and door jambs should also be hacked off in order to insulate them without excessive covering of the architraves. Poorly adherent paint coatings which peel off should be removed. Adhesion of the coating can be checked by cutting it with a knife, gluing it with an adhesive tape, and then peeling off the tape. If, as a result of this test, a fragment of the coating is peeled off, the coating should be regarded as poorly adherent. Local cavities and places where the plaster was hacked off due to its poor adhesion to the substrate should be filled with plastering mortar. Unevenness of the substrate larger than 1 cm should be flattened by gluing a styrofoam (mineral wool) layer of such thickness so as to even the wall surface. Substrates which are highly absorbent (e.g. aerated concrete blocks), unevenly absorptive and sanding should be primed with MajsterGrunt Deep Penetrating primer.

### » 5.2 Mounting a board lath

An aluminium board lath should be adapted to polystyrene (mineral wool) thickness and mounted by means of mechanical expansion connectors deployed at max 50 cm. The board lath must be mounted around the whole building if the insulation starts from the grade level. The board lath should be cut at a proper angle and mounted by means of the mechanical connector at the building corners. If we connect two laths, the edges of both of them should be mounted by means of the mechanical connector. The length of the mechanical connector depends on the type of substrate and should be included in the technical project. The board lath cannot be mounted in the nearest proximity of the ground, concrete or sett. The minimum distance between the lath and the grade level is 2 cm. In the case when the base finishing is performed in another technology, e.g. sandstone or clinker, a perforated corner can be used instead of the board lath, provided that there is a possibility to fold and submerge the mesh.

In the case when a thinner insulating material is used in the base part of the building and a thicker one in the rest, it is not required to use the second board lath, a perforated corner would be sufficient.

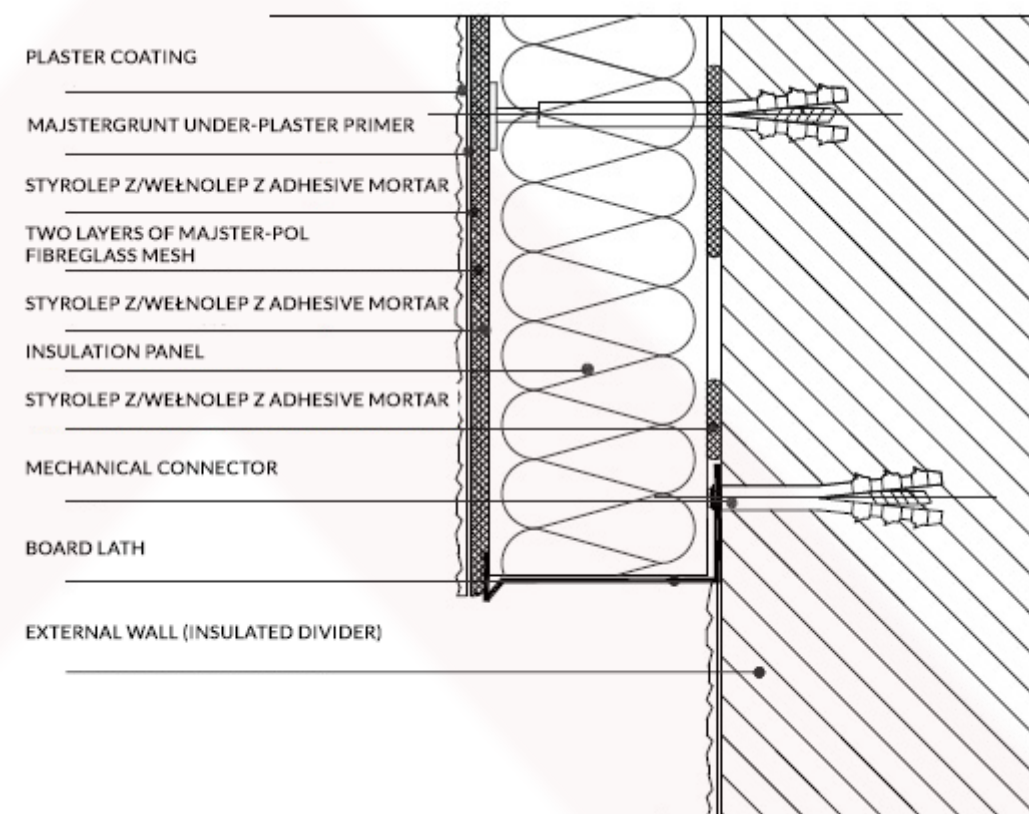


Fig. 5-1. Closeup of the bottom edge of the thermal insulation with board lath. (vertical cross-section)

### » 5.3 Fixing styrofoam panels

Prior to the commencement of the insulating works, it should be remembered to properly season the laths and noted that the laths should not be exposed to poor weather conditions for longer than 7 days.

Styrofoam panels should be fixed to the substrate by means of STYROLEP K adhesive. During preparation of the adhesive mortar, the instruction given on the packaging should be strictly followed. The adhesive should be applied on the styrofoam board using the method of edge and spots. Such amount of the mortar should be applied on the lath that, taking into consideration the substrate unevenness and an adhesive layer possible to apply (ca. 1 cm), that the minimum of 40% of the lath's effective adhesive surface is provided (in case the unevenness exceeds 1 cm, insulation of diversified thickness is used). A band of mortar of ca. 3-5 cm should be applied along the circuit of the lath and additionally 3-6 spots in the middle of the lath. The consumption of the adhesive mass should then be within 4 -5 kg/m<sup>2</sup>.





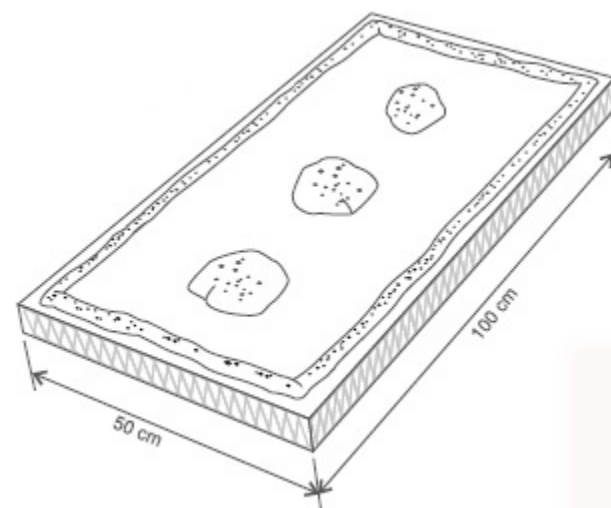


Fig. 5-2. Application of Styrolep K adhesive mortar on the styrofoam board.

There cannot be board joints on the cracks on the wall and on the connecting points between various wall materials. An expansion joint profile should be used in connection places between various materials. Without the profile, uncontrolled cracks may appear on the plaster structure, where water may penetrate and thus damage the whole system.

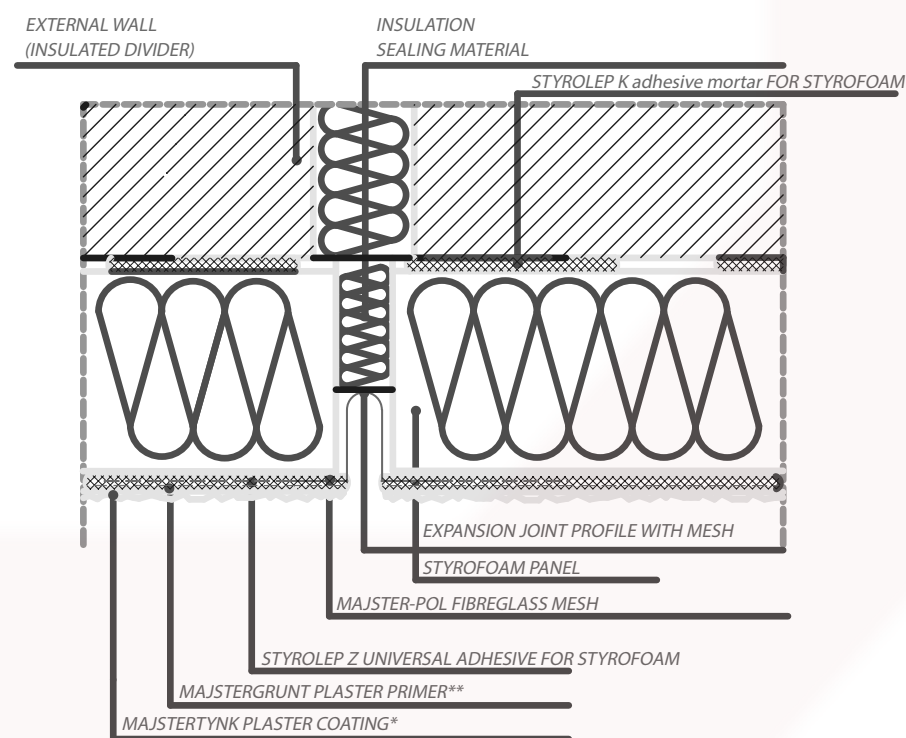


Fig. 5-3. Closeup of a dilatation gap. (horizontal cross-section)

After applying the adhesive mortar on the board, the board should be glued to the wall and pressed by hitting it with a trowel until the board is level with surrounding panels. Tearing off the panels and gluing them for the second time is unacceptable. To correct the alignment of the board, it should be torn off the substrate, the adhesive layer should be removed and then the board can be fixed again. Styrofoam panels should be aligned in such a way that the cracks between them are not wider than 2mm. Puttying the board joints by means of adhesive mortar is unacceptable because the so called thermal bridges are formed in these areas. The resulting cracks should be filled with low-pressure polyurethane foam or stripes of a thermal insulating material. All edges and planes of the thermal insulation system must be thoroughly constructed and processed to provide protection against open flames in case of fire, full tightness against moisture or protection against destruction by insects, birds or rodents. In the corners of the walls the panels should be glued alternately, so that they interlock.

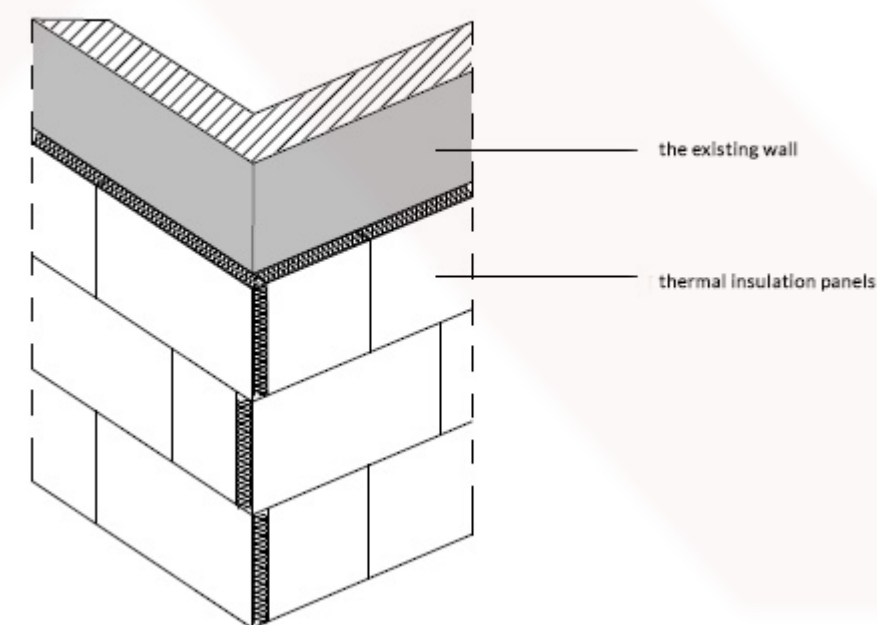


Fig. 5-4. The arrangement of insulation panels at the corner of the building.

Insulation panels should be arranged in such a way that their points of contact are not located at the extension of the edges of window and door openings.



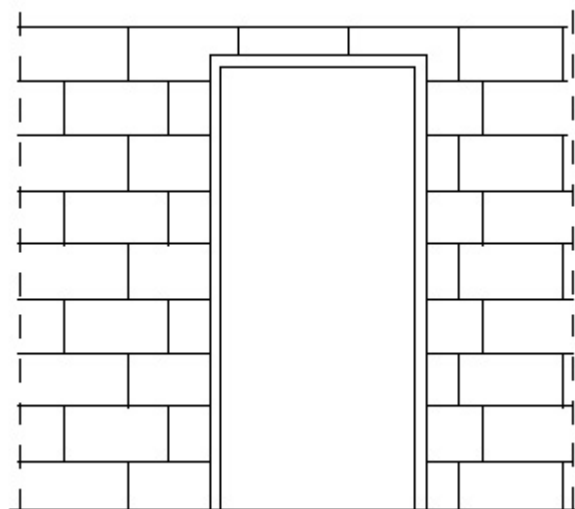


Fig. 5-5. Proper arrangement of the panels around the openings.

After gluing the styrofoam panels their whole surface should be sanded in order to even faults of the adjacent panels. This has a significant impact on the adhesive mortar grip to the styrofoam surface as well as on the aesthetic appearance of the façade. It can be performed not earlier than after 3 days from gluing of the panels. Not earlier than after 3 days from gluing, insulation panels can be additionally mounted by means of mechanical connectors. The decision of whether and how to include studding is up to the designer. It is advisable to use four studs per 1 m<sup>2</sup> in the central part of the wall and 6 connectors at the building edges. It is important that the studs do not protrude above the surface of the styrofoam or are not too deeply driven into the insulation material. After mounting the studs their outer part should be puttied with the adhesive.

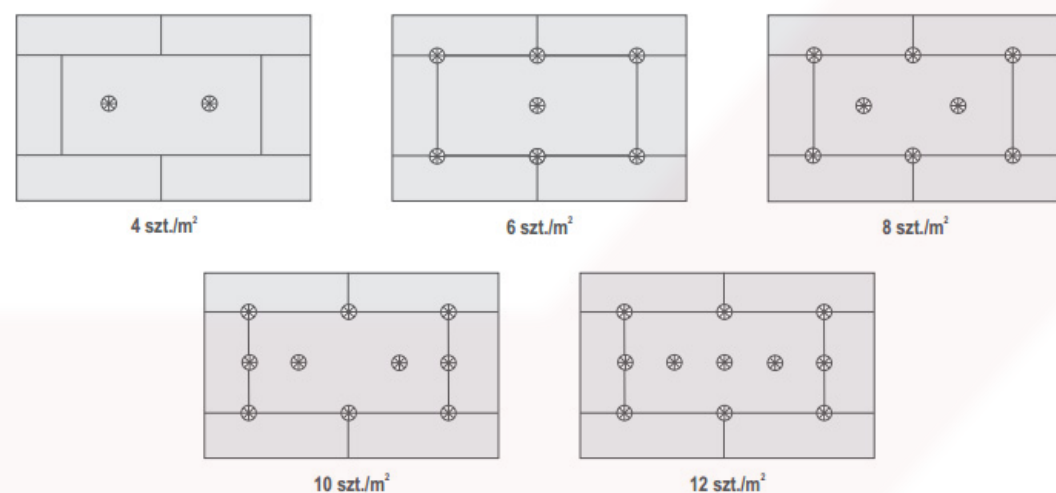


Fig. 5-6. Exemplary schemes of the arrangement of connectors on thermal insulation panels.

Leaving the insulation layer unprotected for a longer period of time is unacceptable because it leads to weakening of the styrofoam structure.

#### » 5.4 Fixing mineral wool panels

Preparing the substrate and mounting mineral wool panels is performed in a similar way as gluing styrofoam panels. There are also several differences in the way of applying the adhesive mortar and of mounting mechanical studs, which are listed below. Fixing mineral wool panels is performed by means of WEŁNOLEP K adhesive mortar. Prior to the commencement of panel fixing it is worth remembering about anti-humidity insulation – the minimum of 50-cm-wide strip of thermal insulation of styrofoam panels should be mounted around the whole building.



Mineral wool panels with disordered fibre arrangement should be glued to the substrate by means of the edge and spots method. It is worth remembering about prior putting of the board with the adhesive in the places of its application. The adhesive mortar should be applied on the panel by means of a trapezoid trowel. The mortar should be arranged into a roll along the panel edge and 3-6 spots of mortar distributed evenly on the whole surface of the panel. In the case of mineral wool panels with lamella structure, the panels should be glued to the substrate by distributing the glue on the whole surface of the panel by means of the back method in two steps. In the first step the adhesive mortar should be applied on the panels with the smooth side of the trowel and then puttied. In the second step the adhesive mortar should be applied evenly on the whole surface of the panel by means of a serrated trowel with 12x12mm notches. The adhesive mortar should be applied in such a way to obtain the correct grip on the whole surface. It should be also remembered that after application of the adhesive, the board should be embedded ca. 2cm before the previously mounted board and then pushed to the edge and tightly pressed. Gluing the panels should begin from the corner of the lower part of the building after prior setting and mounting the board lath and gluing the stripe of styrofoam panels around the building. The panels should be glued horizontally with the use of staggered arrangement of joints and tightly pushed towards the already glued panels. The occurrence of the adhesive mass in the joints as well as tearing off and gluing the panels for the second time are unacceptable. The consumption of the adhesive mass on an even substrate is ca. 6 kg/m<sup>2</sup>. In addition, it is absolutely necessary that mineral wool panels with disordered fibre arrangement are mounted to the walls by means of special mounting studs. This activity can be performed when the adhesive is completely dry, but not earlier than after 3 days from gluing. Type, duration, and scheme of the connectors distribution should be specified in the technical documentation of the building thermal insulation. In the case of lamella wool, studding on a properly prepared substrate to a height of 20m in not required. In the case of the walls of buildings which are not higher than 20 m but which are located in the areas of strong winds and air currents the lamellar panels also should be additionally mounted by means of mechanical connectors. In case of the absence of the project, the following is commonly assumed:

- for lamellar panels per 1m<sup>2</sup>:  
4 pieces on an insulated surface in the central zone  
7-11 pieces in the peripheral zone
- for the panels with disordered fibre structure:  
6 pieces on an insulated surface in the central zone  
6-10 pieces in the peripheral zone

It is assumed that the insertion depth of the mandrel in the construction of the wall should be:

- min. 5-6 cm – compact substrate (concrete, solid brick or stone)

- min. 8-9 cm – porous substrate (gas concrete, hollow brick or chequer brick)

Regardless of the studs seating (anchorage) depth, the test of the effectiveness of mechanical fastening to the substrate. The test includes 4-6 attempts of uprooting according to the rules specified in ETA which allow for the use of the given connectors in the construction industry. In the peripheral parts of the building, which are exposed to the strongest wind force, i.e. from 1 to 2m from the edge, the insulation project should provide for an increased number of connectors. Special care in fastening the connectors is of utmost importance. The connectors should be put inside drilled holes and anchored with screw-in or nailed mandrels. Heads of the connectors must not protrude beyond the wool plane - they should be exactly faced. To achieve this, the mineral wool panels should be grooved in ca. 4 mm deep concavities for the connector heads.

The ideal solution minimizing the formation of thermal bridges is milling ca. 2 cm deep cavities for the connectors. Then the space above it should be covered with a specially prepared disc of mineral wool of a proper thickness. It is inappropriate to nail the connector heads with a hammer. If the connector heads are nailed too deeply into the wool, the wool may crack (break) and thus weaken the capacity of mechanical connectors. Putting the concavities in the mineral wool slabs - in the places where the connector heads are - may result in flaking of the thin-layer plaster in these areas.

## » 5.5 Implementation of the reinforcing layer

Performing the reinforcing layer includes the embedding of reinforcing mesh in a layer of adhesive mortar on the insulation panels surface. STYROLEP Z or STYROLEP Z White should be used in the systems with styrofoam, and WEŁNOLEP Z in the systems with mineral wool. The particular adhesive should be applied with



a notched trowel on the insulation board surface starting from the top of the wall in vertical stripes which should have a width of the reinforcing material. After the adhesive is applied, a properly cut mesh should be embedded in the adhesive.

The mesh should be completely embedded in the adhesive mortar. Then another thin layer of the adhesive should be applied on the top of the surface to completely cover the mesh.

The resulting surface should be carefully smoothed and levelled. The thickness of the adhesive layer at a single fabric should be from 3 to 5 mm. Consumption of the adhesive in case of the mesh embedding is ca. 3.5 kg/m<sup>2</sup> for STYROLEP Z and ca. 5 kg/m<sup>2</sup> for WEŁNOLEP Z.

**It is unacceptable to prepare the reinforcing layer thinner than 3 mm, e.g. 1.5 or 2 mm, due to faster and excessive drying of the adhesive mortar in the course of binding. It is also impossible to achieve the correct strength of the whole protective layer of the insulating panel then.**

The mesh should be embedded in such a way that it is equally strained and the adjacent stripes should have more than 10 cm overlap. The mesh overlaps cannot coincide with the joints between the panels. Reinforcing material (20x35 cm) should be glued at an angle of 45 degrees on the insulation panels at the corners of the

window and door openings. This prevents formation of scratches and cracks on the building façade.

It is advisable to use an additional layer of mesh on these parts of the building which are more exposed to mechanical damage. It is performed in the same way as the first layer. Then the first layer of the mesh should be placed horizontally and the other vertically. Prior to fixing the mesh, an aluminium angle bracket perforated with mesh should be glued in order to increase the strength at all vertical and horizontal corners. Sometimes, in case of high humidity, lime efflorescence may appear on the adhesive layer – if the efflorescence is very intense, it impedes binding between the substrate and the base. It is not a defect, however, it should be removed by means of a trowel with sandpaper or washed with water.

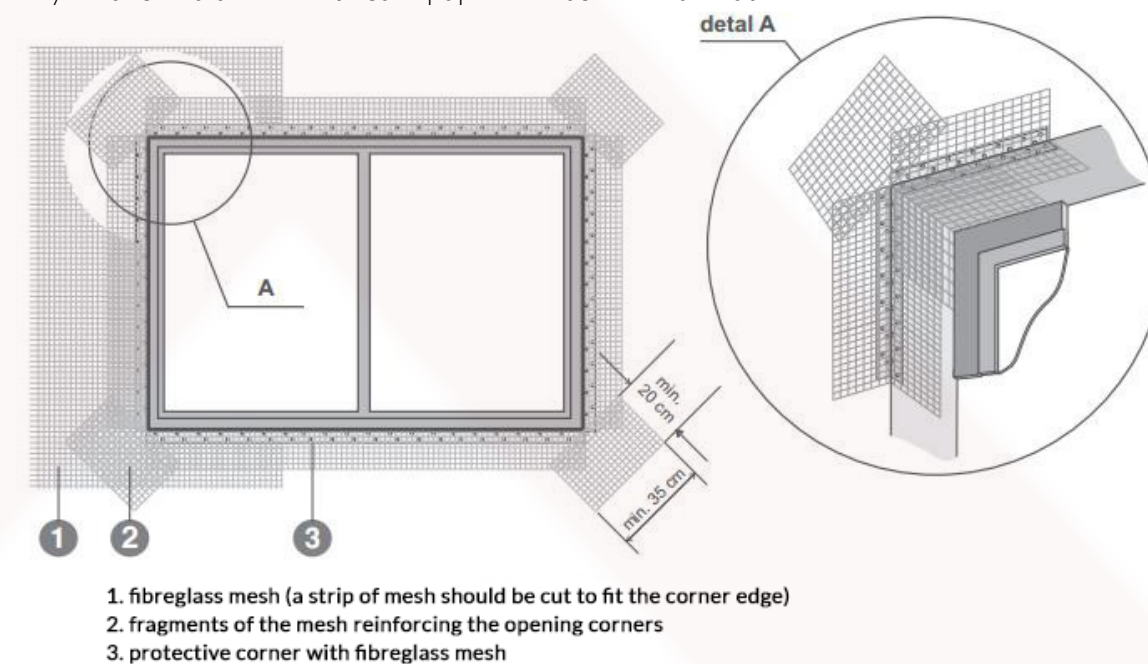


Fig. 5-7. A way of fixing fiberglass mesh around window and door openings.

## » 5.6 Priming

MajsterGrunt Under-Plaster Primer and MASTER BRICK GROUND provide optimal surface grip between plaster and substrate as well as decrease and even substrate absorbency. Under normal weather conditions

after ca. 3 days of drying (this period may be prolonged under adverse weather conditions) a layer of plastering base, selected accordingly to the kind of external plaster, should be applied by a brush or roller. In the case of through dyed plaster it is advisable to select plastering base of a colour matching the colour of the plaster. Plastering can begin not earlier than after 24 hours after priming the wall surface. If it is impossible to continue the works, they may be suspended and resumed after a short period of time. In this situation it is required to remove dirt from the surface or even to prime it again.





## 6. Preparing plaster

### » 6.1 MAJSTERTYNK ACRYLIC PLASTER

It is a mixture of plastic consistency based on styrene-acrylic dispersion. Its composition also includes an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion owing to a long time of release of its three active ingredients.



It is possible to obtain two types of structures: textured and pitted.

Immediately prior to use, the whole content of the packaging should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained. Plaster coating should be performed after complete drying of the priming layer, not earlier than after 3 days from completion of the reinforcing layer, according to the texture defined in the project. The prepared plaster mortar must be distributed as a thin, even layer on the substrate, using a smooth stainless steel trowel for this purpose.

Afterwards, the excess of plaster should be removed by means of the same trowel to obtain the layer with a thickness of the aggregate contained in the mass. The desired texture of the plaster should be obtained by rubbing the applied plaster with a flat plastic trowel. The rubbing operation should be performed in circular (textured structure) or vertical or horizontal longitudinal movements (pitted structure), evenly over the entire surface of the façade and with little pressure on the trowel. The plaster is produced in white and other colours according to colour palette.

Textured grain thickness	1,0 mm	1,5 mm	2,0 mm	2,5 mm
Consumption in kg/m2	1,6 - 1,8	2,2 - 2,5	2,8 - 3,2	3,5 - 3,9
Pitted grain thickness	1,5 mm	2,0 mm	2,5 mm	3,0 mm
Consumption in kg/m2	2,3 - 2,7	2,8 - 3,2	3,3 - 3,7	3,8 - 4,2

### » 6.2 MAJSTERTYNK MOSAIC PLASTER

It is a mixture of plastic consistency based on acrylic dispersion. It contains carefully selected compositions of coloured quartz aggregate which impart a decorative character to the surface. It is very resistant to damage and scrubbing, which allows for frequent washing without the risk of destroying the surface.



These properties allow to apply the plaster in areas susceptible to damage and dirt. It is especially recommended for finishing walls in busy places such as staircases, hallways and communication passage as well as on building facades, bases, pilasters, cornices, foundations, balconies and as an ornament in window and door jambs.

Immediately prior to use, the whole content of the packaging should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained. Plaster coating can be performed

not earlier than after 3 days from completion of the reinforcing layer. The prepared plaster mortar must be distributed as a thin, even layer on the substrate, using a smooth stainless steel trowel for this purpose. Afterwards, the excess of plaster should be removed by means of the same trowel to obtain the layer with a thickness of the aggregate contained in the mass or a bit thicker, then the applied plaster should be smoothed in one direction (e.g. from bottom to top) until an even smooth uniform homogeneous surface is obtained. Plaster is produced in colours according to colour palette.

Grain thickness	fine-grained	medium-grained	coarse-grained
Consumption	3 kg/m <sup>2</sup>	4 kg/m <sup>2</sup>	5 kg/m <sup>2</sup>

### » 6.3 MAJSTERTYNK SILICONE PLASTER

It is a tinted mixture of plastic consistency based on styrene-acrylic dispersion which makes the coating very resistant and durable while maintaining its high flexibility. Owing to the silicone-organic dispersion the plaster structure is microporous which enables the transport of water vapour and gases.

The hydrophobicity of the coating is owed to silicone and siloxane polymers. Combination of nanotechnology and characteristics of silicate, provides the plaster with a high resistance to dirt. Its composition also includes an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion owing to a long time of release of its three active ingredients. It is possible to obtain two types of structures: textured and pitted.



Immediately prior to use, the whole content of the packaging should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained. Plaster coating should be performed not earlier than after 3 days from completion of the reinforcing layer, according to the texture defined in the project. The prepared plaster mortar must be distributed as a thin, even layer on the substrate, using a smooth stainless steel trowel for this purpose. Afterwards, the excess of plaster should be removed by means of the same trowel to obtain the layer with a thickness of the aggregate contained in the mass. The desired texture of the plaster should be obtained by rubbing the applied plaster with a flat plastic trowel. The rubbing operation should be performed in circular (textured structure) or vertical or horizontal longitudinal movements (pitted structure), evenly over the entire surface of the façade and with little pressure on the trowel. The plaster is produced in white and other colours according to colour palette.

Textured grain thickness	1,0 mm	1,5 mm	2,0 mm	2,5 mm
Consumption in kg/m2	1,6 - 1,8	2,2 - 2,5	2,8 - 3,2	3,5 - 3,9
Pitted grain thickness	1,5 mm	2,0 mm	2,5 mm	3,0 mm
Consumption in kg/m2	2,3 - 2,7	2,8 - 3,2	3,3 - 3,7	3,8 - 4,2

» 6.4 MAJSTERTYNK SILICATE PLASTER

It is a tinted mixture of plastic consistency. Owing to the combination of styrene-acrylic dispersion and potassium silicate it is characterised by outstanding resistance against weathering and very high water vapour and carbon dioxide permeability which allows for free evaporation of moisture from the walls.



Its composition also includes an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion owing to a long time of release of its three active ingredients. It is possible to obtain two types of structures: textured and pitted. Immediately prior to use, the whole content of the packaging should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained.

Plaster coating should be performed not earlier than after 3 days from completion of the reinforcing layer, according to the texture defined in the project. The prepared plaster mortar must be distributed as a thin, even layer on the substrate, using a smooth stainless steel trowel for this purpose. Afterwards, the excess of plaster should be removed by means of the same trowel to obtain the layer with a thickness of the aggregate contained in the mass. The desired texture of the plaster should be obtained by rubbing the applied plaster with a flat plastic trowel. The rubbing operation should be performed in circular (textured structure) or vertical or horizontal longitudinal movements (pitted structure), evenly over the entire surface of the façade and with little pressure on the trowel. Too low temperature and too high air humidity (evening and morning dew, fog, rain, etc.) during plaster binding process may cause discolouration on the surface. They are not defects of the plaster, however, they significantly degrade the aesthetics of the façade. The plaster is produced in white and other colours according to colour palette.

Textured grain thickness	1,0 mm	1,5 mm	2,0 mm	2,5 mm
Consumption in kg/m2	1,6 - 1,8	2,2 - 2,5	2,8 - 3,2	3,5 - 3,9
Pitted grain thickness	1,5 mm	2,0 mm	2,5 mm	3,0 mm
Consumption in kg/m2	2,3 - 2,7	2,8 - 3,2	3,3 - 3,7	3,8 - 4,2

» 6.5 MAJSTERTYNK SI-SI PLASTER

It is a tinted mixture based on silicone-organic dispersion, potassium silicate and aqueous dispersion of styrene-acrylic resin. It is a product which combines the best features of silicate and silicone plasters. It is a „breathing and self-cleaning” plaster. It is characterised by very high resistivity towards adverse weather conditions, very high water vapour diffusion and high hydrophobicity.



The use of highly valuable characteristics of silicate significantly increases the plaster qualities such as: better resistance to dirt, UV radiation, wind, precipitation or temperature variation. The structure of the coating is microporous, which enables free transport of water vapour and gases. The hydrophobicity of the coating is owed to silicone and siloxane polymers. The product also contains coating biocide which significantly reduces the risk of occurrence of biological aggression on the produced plaster coating.

Immediately prior to use, the whole content of the packaging should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained. Plaster coating should be performed not earlier than after 3 days from completion of the reinforcing layer, according to the texture defined in the project. The prepared plaster mortar must be distributed as a thin, even layer on the substrate, using a smooth stainless steel trowel for this purpose. Afterwards, the excess of plaster should be removed by means of the same trowel to obtain the layer with a thickness of the aggregate contained in the mass. The desired texture of the plaster should be obtained by rubbing the applied plaster with a flat plastic trowel. The rubbing operation should be performed in circular (textured structure) or vertical or horizontal longitudinal movements (pitted structure), evenly over the entire surface of the façade and with little pressure on the trowel. Too low temperature and too high air humidity (evening and morning dew, fog, rain, etc.) during plaster binding process may cause discolouration on the surface. They are not defects of the plaster, however, they significantly degrade the aesthetics of the façade. The plaster is produced in white and other colours according to colour palette.

Textured grain thickness	1,0 mm	1,5 mm	2,0 mm	2,5 mm
Consumption in kg/m2	1,6 - 1,8	2,2 - 2,5	2,8 - 3,2	3,5 - 3,9
Pitted grain thickness	1,5 mm	2,0 mm	2,5 mm	3,0 mm
Consumption in kg/m2	2,3 - 2,7	2,8 - 3,2	3,3 - 3,7	3,8 - 4,2

» 6.6 MAJSTERTYNK MINERAL PLASTER

It is a high-quality dry mixture based on hydraulic binders, mineral fillers with the addition of polymer dispersion, therefore it forms a particularly durable external coating with high vapour permeability which is very resistant to weather conditions. It is possible to obtain two types of structures: textured and pitted.

Content of the bag is to be put inside a container with a measured quantity of water (5.5-6.0 litres of water per 25 kg of the mortar) and stirred carefully with a low-speed stirrer with a stirrer basket until a homogeneous mass is obtained. After 5 minutes the plaster should be stirred again and it becomes ready for use. Plaster coating should be performed not earlier than after 3 days from completion of the reinforcing layer, according to the texture defined in the project. The prepared plaster mortar must be distributed as a thin, even layer on the substrate, using a smooth stainless steel trowel for this purpose. Afterwards, the excess of plaster should be removed by means of the same trowel to obtain the layer with a thickness of the aggregate contained in the mass.



The desired texture of the plaster should be obtained by rubbing the applied plaster with a flat plastic trowel. The rubbing operation should be performed in circular (textured structure) or vertical or horizontal longitudinal movements (pitted structure), evenly over the entire surface of the façade and with little pressure on the trowel.

Plaster is produced in white and grey.

Mineral plaster binding is based on chemical reaction of cement binder with water added during the mixing



process. As a result of this reaction the cement cures. Calcium hydroxide also appears in the binding process. Too low temperature and too high air humidity (evening and morning dew, fog, rain, etc.) during the plaster binding process enable transport of calcium hydroxide to the plaster surface. The process of carbonization takes place, which results in white coating of calcium carbonate, the so called salt efflorescence, on the surface. They are not defects, however, they degrade the aesthetics of the insulated façade. In order to prevent this it is advisable to prime the mineral plaster with MajsterGrunt Deep Penetrating agent prior to façade colouring.

Textured grain thickness	1,0 mm	1,5 mm	2,0 mm	2,5 mm
Consumption in kg/m2	1,6 - 1,8	2,2 - 2,5	2,8 - 3,2	3,5 - 3,9
Pitted grain thickness	1,5 mm	2,0 mm	2,5 mm	3,0 mm
Consumption in kg/m2	2,3 - 2,7	2,8 - 3,2	3,3 - 3,7	3,8 - 4,2

MajsterTynk Mineral Plaster requires colouring with a selected paint - MajsterFarba Acrylic Paint (6.9), MajsterFarba Silicone Paint (6.10), MajsterFarba Silicate Paint (6.11) or MajsterFarba Si-Si Paint (6.12).

» 6.7 MASTER BRICK

Master Brick is used to create building façades with the use of templates which imitate clinker bricks. It is a tinted mixture of plastic consistency based on aqueous styrene-acrylic dispersion. It is available in 11 of the most popular clinker brick colours. It creates a highly flexible and durable coating.



Immediately prior to use, the whole content of the packaging should be stirred thoroughly until a homogeneous consistency and colour have been obtained.

Then further mixing in not advisable due to the possibility of aeration of the mass. The package contains a ready product and no other ingredients should be added.

The plastering works can be started when the priming layer is dry and not earlier than

after 24 h from priming. Put the templates imitating clinker bricks on the primed surfaces which are in the colour of the joint. Press the templates to the surface by means of a hard rubber roller so that the applied material does not make them detached. Prior to its application the mass should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained. The product is ready for use, it should not be diluted with water. In order to obtain even texture, the plaster should be applied and smoothed with the use of a stainless steel trowel. The prepared mortar should be distributed on the whole surface in horizontal stripes starting from the upper edge. The stripes should have a thickness of the template. It is important that the mortar thoroughly covers the whole surface. Otherwise, colour differences can be visible after drying of the plaster. Shading of the plaster should be performed with the use of MASTER TONE lacquer matched to the colour, a minimum of 24h after applying the plaster. After drying of the lacquer layer (a minimum of 3h in optimal weather conditions) the whole plastered surface should be sprayed with clear or pearl MASTER TONE lacquer dedicated to a given brick colour. The templates should be removed after a minimum of 24 h (in optimum weather conditions). Removing the templates too early (especially on cold rainy days) may cause notching of bricks edges. A picking test should be conducted.

Depending on the substrate and thickness of the template, consumption ranges from 1.6-1.8 kg/m².

» 6.8 MASTER POLI

It is used to perform smooth plaster coating outside buildings. It is fine-grained mass whose appearance is similar to traditional lime-cement plaster. It is produced on the basis of silicone-organic dispersion. The structure of the coating is microporous, which enables free transport of water vapour and gases. The hydrophobicity of the coating is owed to silicone and siloxane polymers. The use of highly valuable characteristics of silicate significantly increases the plaster qualities such as: resistance to dirt, UV radiation, wind, precipitation or temperature variation. The product also contains coating biocide which significantly reduces the risk of occurrence of biological aggression on the produced plaster coating. It is perfectly suited for new surfaces as well as for renovation of old buildings. It is available in 40 colours.



Immediately prior to use, the whole content of the packaging should be thoroughly stirred with the use of a low-speed stirrer with a stirrer basket until a homogeneous mass has been obtained. Then further mixing in not advisable due to the possibility of aeration of the mass. The package contains a ready product and no other ingredients should be added. In order to obtain the desired working consistency, adding clean tap water is permitted. In the case of excessive dilution, the material will be difficult to process and may not provide proper covering.

The prepared plaster mortar must be distributed as a thin even layer on the substrate, using a smooth stainless steel trowel for this purpose. Afterwards, remove the excess of plaster to obtain the layer with a thickness which does not make the substrate visible. The desired texture should be obtained by rubbing the plaster with a flat latex trowel recommended by the manufacturer. The rubbing operation should be performed in a circular or a figure-eight movement, evenly over the entire surface of the façade and with little pressure on the trowel.

The plaster should not be treated with too wet tools, as it may lead to discolouration. From time to time the trowel should be cleaned by immersing it in water. The excess of water should be removed by squeezing on the glazing cuvette rolls. If after a single application and seizure, a good visual effect is not achieved (abrasion caused by uneven ground), the second layer of the plastering mass should be applied in the way described above.

Consumption – about 1.2-1.5 kg/m²

» 6.9 MAJSTERFARBA ACRYLIC PAINT

It is a dispersion paint intended for painting building façades. It can be used to cover all substrates made of construction materials such as brick, concrete, cement, plaster-cardboard panels, etc. The paint forms a coating characterised by high resistance to weathering and mechanical damage. It protects the plaster against penetration of moisture, at the same time allowing for penetration of air. On the covered surfaces it forms a matte coating which is very resistant to scrubbing and has a high decorative value. Its composition also includes an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion owing to a long time of release of its three active ingredients.



## » 6.10 MAJSTERFARBA SILICONE PAINT

It is a dispersion paint intended for painting building façades. It can be used to cover all substrates made of construction materials such as brick, concrete, cement, plaster-cardboard panels, etc. The structure of the silicone paint coating is microporous, which enables free transport of water vapour.



The Silicone Paint has low absorbability which makes it more resistant to dirt. The hydrophobicity of the coating is owed to silicone and siloxane polymers. It is intended for decorative, renovation and preservation paint coatings on external façades of buildings. On the covered surface the paint forms a matte coating which is very resistant to scrubbing and to changing weather conditions. Its composition also includes an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion owing to a long time of release of its three active ingredients.

## » 6.11 MAJSTERFARBA SILICATE PAINT

It is a paint based on dispersion and potassium silicate, intended for painting building façades. The paint can be used to cover mineral substrates such as concrete, cement or cement-lime plasters as well as mineral, silicate and silicone plasters. The paint forms a coating characterised by high resistance to weathering and mechanical damage.



It is highly vapour-permeable. As a result of a chemical reaction the paint is an instant binder to the substrate. On the covered surfaces the paint forms a matte coating which has high wear resistance. Its composition also includes an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion owing to a long time of release of its three active ingredients.

## » 6.12 MAJSTERFARBA SI-SI PAINT

It is intended for decorative and renovation paint coatings on external façades of buildings. On the covered surface the paint forms a colourful matte coating which is very resistant to scrubbing and to changing weather conditions. It has high water vapour permeability.



The paint has low absorbability which makes it more resistant to dirt. The hydrophobicity of the coating is owed to silicone and siloxane polymers. The coating biocide used in the product significantly reduces the risk of occurrence of biological aggression on the produced plaster coating.

Painting of the MajsterTynk Mineral Plaster can be performed after its thorough drying and seasoning. Depending on the type of paint, the seasoning period after the plaster application should be as follows:

- MajsterFarba Acrylic Paint - a minimum of 4 weeks

- MajsterFarba Silicone Paint - a minimum of 4 weeks
- MajsterFarba Silicate Paint - a minimum of 7 days
- MajsterFarba Si-Si Paint - a minimum of 7 days

The paint can be applied with a brush or roller, always in two layers. Depending on the painted substrate, consumption of the paint ranges from 0.2-0.3 l/m<sup>2</sup>. Drying period under optimum conditions (20°C, humidity 60%) is min. 3 h. The next layer of paint should be applied after the previous layer is completely dry. In order to achieve optimum aesthetic qualities, one complete surface should be painted in one execution phase with material coming from one order and one production batch (see: date of production).

## » 6.13 MASTER TONE COLOR

The lacquer is designed for decorative shading of the MASTER BRICK plaster surface. The product enables achieving the effect of natural colours of clinker brick.

Immediately prior to use, the whole content of the packaging should be stirred thoroughly until a homogeneous consistency and colour have been obtained. Then further mixing is not advisable due to the possibility of aeration of the mass. The package contains a ready product and no other ingredients should be added. The lacquer can be applied by means of pneumatic or hydrodynamic spraying. A brush or sponge can also be used in the application process, what will result in an interesting finishing. Lacquer in an appropriate colour should be applied on MASTER BRICK plaster (shading should be made on some of the plaster bricks) and then it should be left for drying. Then the whole plaster should be covered with colourless lacquer. Note: the correct end result strictly depends on the application conditions: temperature, humidity and coating thickness, therefore, it is necessary to establish specific parameters under real conditions. The suggested amount of lacquer is 100-150 µm/m<sup>2</sup>. Optimum relative humidity values for the lacquer application are 40-60%.



Consumption – about 0.1 – 0.12 kg/m<sup>2</sup> (when painted twice).

## » 6.14 MASTER TONE TOP COAT

The lacquer is designed for decorative and protective painting of the MASTER BRICK plaster surface. Owing to the product the whole plaster surface becomes protected and gains delicate gloss. The presence of UV absorber ensures that the colour of the protected plaster remains unchanged for a long time. In addition, it is protected by the most modern encapsulated biocide the market has on offer. Owing to a long time of release of three active ingredients the biocide ensures long-lasting and durable protection of coating against microbiological corrosion.

Immediately prior to use, the whole content of the packaging should be stirred thoroughly until a homogeneous consistency and colour have been obtained. Then further mixing is not advisable due to the possibility of aeration of the mass. The package contains a ready product and no other ingredients should





be added. The lacquer can be applied by means of pneumatic or hydrodynamic spraying. A brush or sponge can also be used in the application process, what will result in an interesting finishing. Lacquer in an appropriate colour should be applied on MASTER BRICK plaster (shading should be made on some of the plaster bricks) and then it should be left for drying. Then the whole plaster should be covered with colourless lacquer. Note: the correct end result strictly depends on the application conditions: temperature, humidity and coating thickness, therefore, it is necessary to establish specific parameters under real conditions. The suggested amount of lacquer is 100-150 µm/m<sup>2</sup>. Optimum relative humidity values for the lacquer application are 40-60%.

Consumption – about 0.1 – 0.12 kg/m<sup>2</sup> (when painted twice).

### » 6.15 Weather conditions for conducting insulation works

Each stage of insulation works should be conducted in appropriate weather conditions. High amount of sunshine, strong wind, rain or snow should be avoided. The optimum temperature of the substrate and the environment should be between +5°C and +25°C, and relative humidity should be 60%. For silicate and silicate-silicone products the temperature of the substrate and the environment should not be lower than +10°C. Until the freshly applied material is completely dry it should be protected against the temperature decrease – below +10°C for silicate and silicate-silicone products and +5°C for all other products.

The works should be organised in a proper way, depending on the size of the plastered or painted surface and weather conditions. In order to avoid visible joints, complete, inseparable wall surfaces should be plastered or painted as a whole without interruptions in work, by means of the “wet-on-wet” method

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The works should be organised in a proper way, depending on the size of the plastered or painted surface and weather conditions. In order to avoid visible joints, complete, inseparable wall surfaces should be plastered or painted as a whole without interruptions in work, by means of the “wet-on-wet” method.

### » 6.16 Colour selection

The plasters and paints are produced on the basis of natural fillers as well as marble and dolomite aggregates which can have different hues depending on the deposit. Owing to this, in order to minimise colour differences, we recommend to give the production date and batch number located on the label while placing an additional order in the case more material is needed. While matching the colours it is particularly worth noting that they look differently in natural light and in an artificial one. The differences also stem from different perception of colours in the template and on a large area of the façade. In addition, the colour impression is affected by: diversity of the texture, surface of the plaster, humidity, season of the year, surroundings, distance from an object and type and nature of the lighting. Eventually, the resulting colour to a large extent also depends on the conditions of implementation and adopted technology (finishing with through dyed plaster, or white or

grey mineral plaster painted with façade paint). When planning a façade colour it is not recommended to use plasters and paints of very intense dark colour, i.e. when the colour brightness ratio is < 25%, in the insulation systems with styrofoam due to the low thermal resistance of styrofoam panels. High temperature that may occur in such conditions results in adverse thermal stress in the insulation system layers and reduces the façade durability. Therefore, it is not advisable to use dark intense colours if they constitute more than 10% of the façade surface. Colour changes of the façade which become visible in the course of time stem from a natural process of decoloration of plasters and paints due to the UV radiation. As a rule, decoloration of façade painted with an intense colour is the most noticeable. This is a natural phenomenon. The basis for the choice of colours to repaint a fragment of the façade should be an existing colour tones, not a colour template. Evaluation of the external appearance is a visual assessment of the finished surface of the insulation. When checked from a distance of > 3m in diffused light its colour and texture should be homogeneous and unchanging, there should not be any bulges or concavities either. Permissible deviations of the finished system face from the plane (surface), the vertical and the horizontal, should be in accordance with the general terms and conditions of the technical acceptance of the works.

### » 6.17 Utilisation and maintenance of the system

Plaster coating is an element of the insulation system which is the most exposed to mechanical and chemical damage. It is constantly exposed to weathering, erosion factors of acid rain and random impact forces. The durability of insulation system is evaluated for at least 25 years, however, plaster coating is the weakest element of the insulation because due to the influence of external factors this layer is exposed to damage, discoloration, chipping and loosening from the reinforced layer. Formation of the damage in the plaster coating layer may be the beginning of the damage in other layers, therefore, periodic restoration and repair of plaster coating is required. In case of defects, mechanical damage in plaster coating, it should be immediately treated by means of puttying, painting or applying a new layer of plaster. Moreover, it is recommended to remove algae, dirt, dust, etc. from plaster coating by means of water with detergents, and then spray with ELEWACID. This allows for the removal of micro-organism spores from the plaster layer and thus prevents their development. The first surface-disinfection treatment depends on the location of the building and its tendency to be covered with micro-organisms, and should be performed after about five years after the system installation. Subsequent treatments should be conducted every 2-3 years, depending on the needs. In order to prolong the period between the treatments, it is worth painting the façade with proper paints which include an innovative biocide in an encapsulated form, which ensures long-lasting protection of coating against microbiological corrosion.

## 7. Additional technical drawings

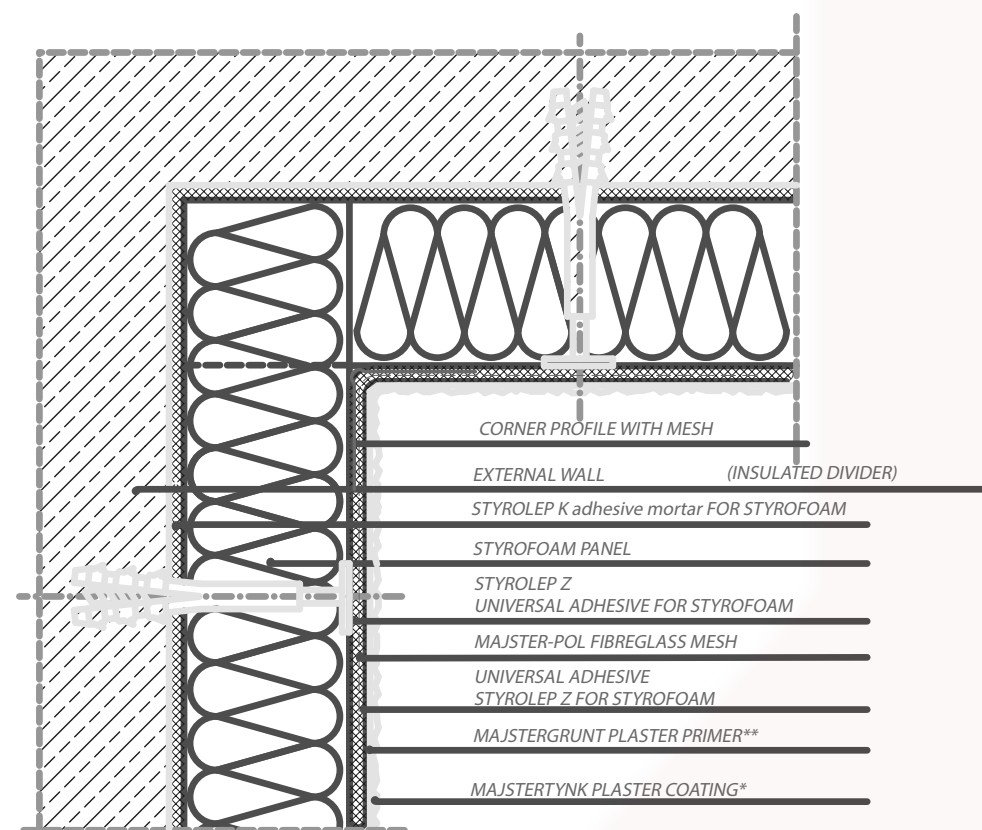


Fig. 7-1. Closeup of concave corner insulation. (horizontal cross-section)

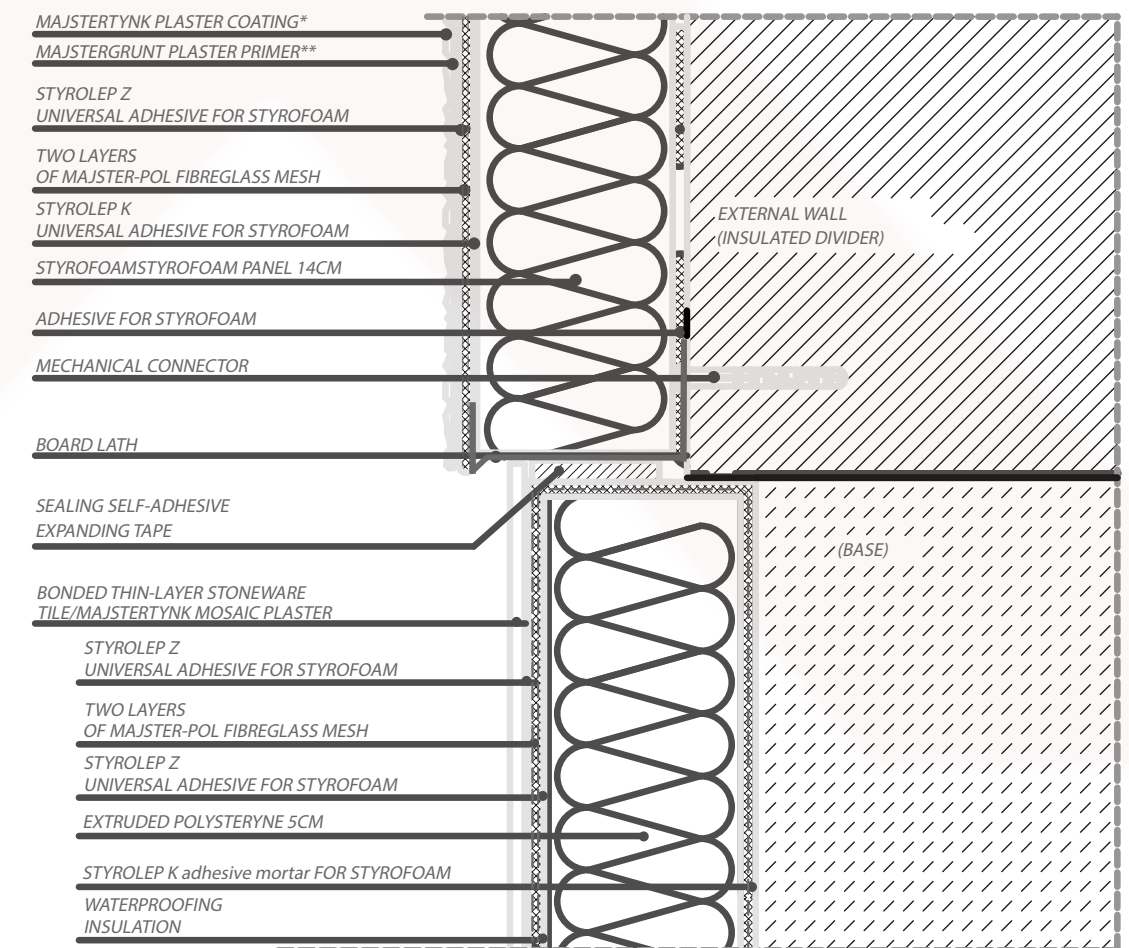


Fig. 7-2. Closeup of base insulation. (vertical cross-section)



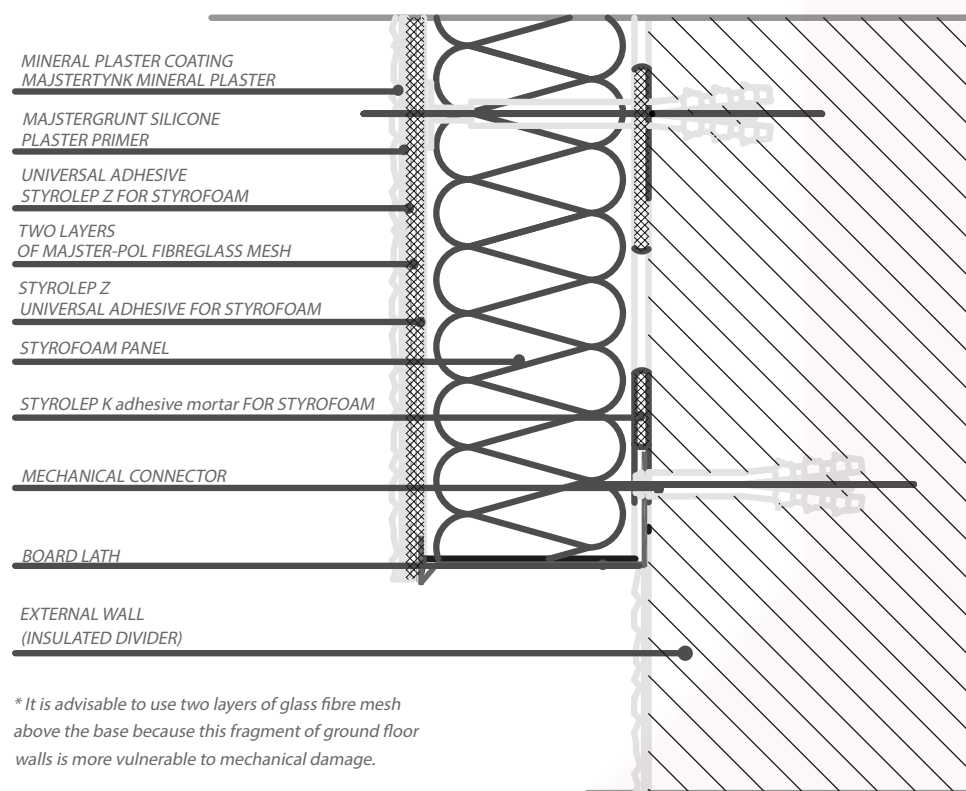


Fig. 7-3. Closeup of the bottom edge of the thermal insulation with board lath. (vertical cross-section)

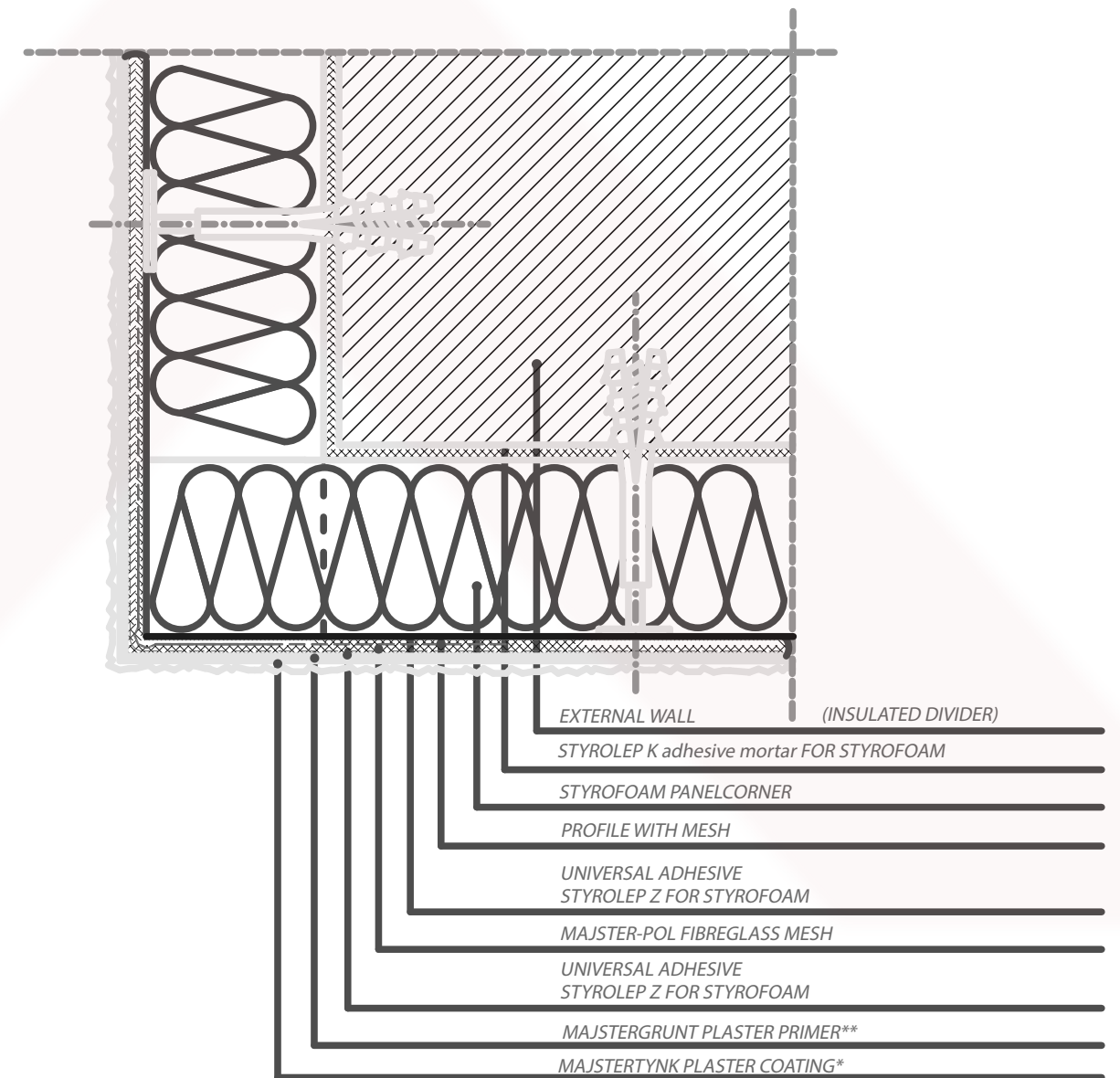


Fig. 7-4. Closeup of concave corner insulation. (horizontal cross-section)

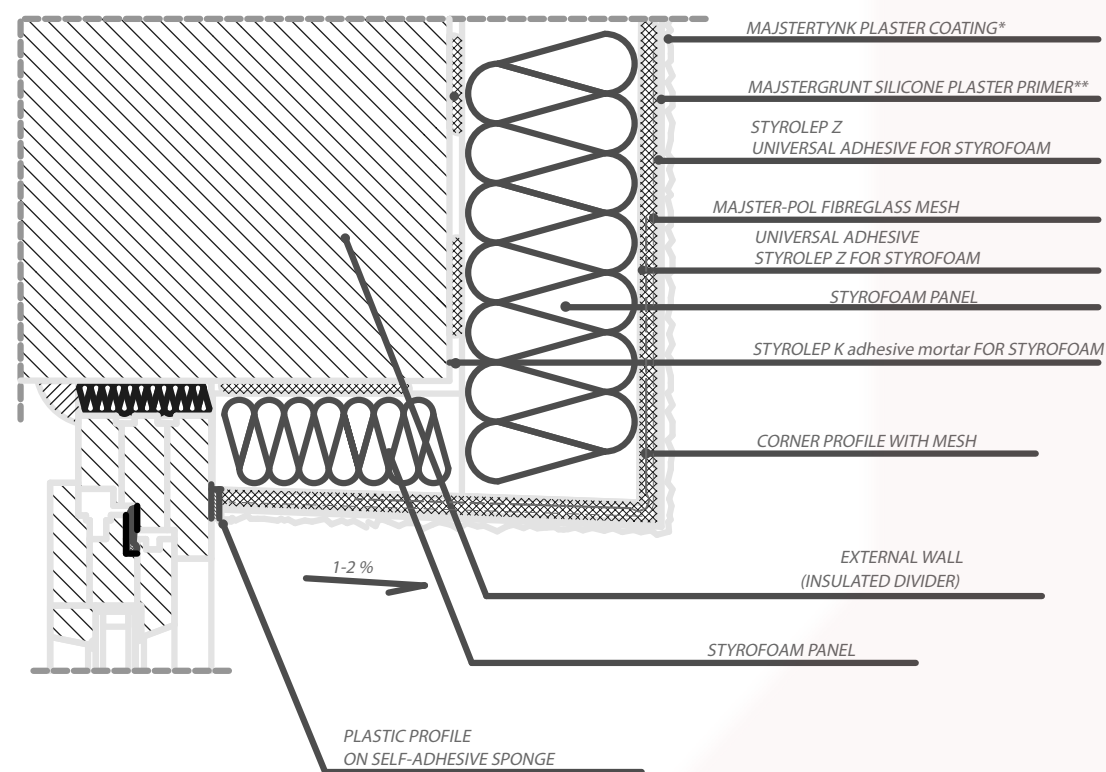


Fig. 7-5. Closeup of window and door lintel. (vertical cross-section)

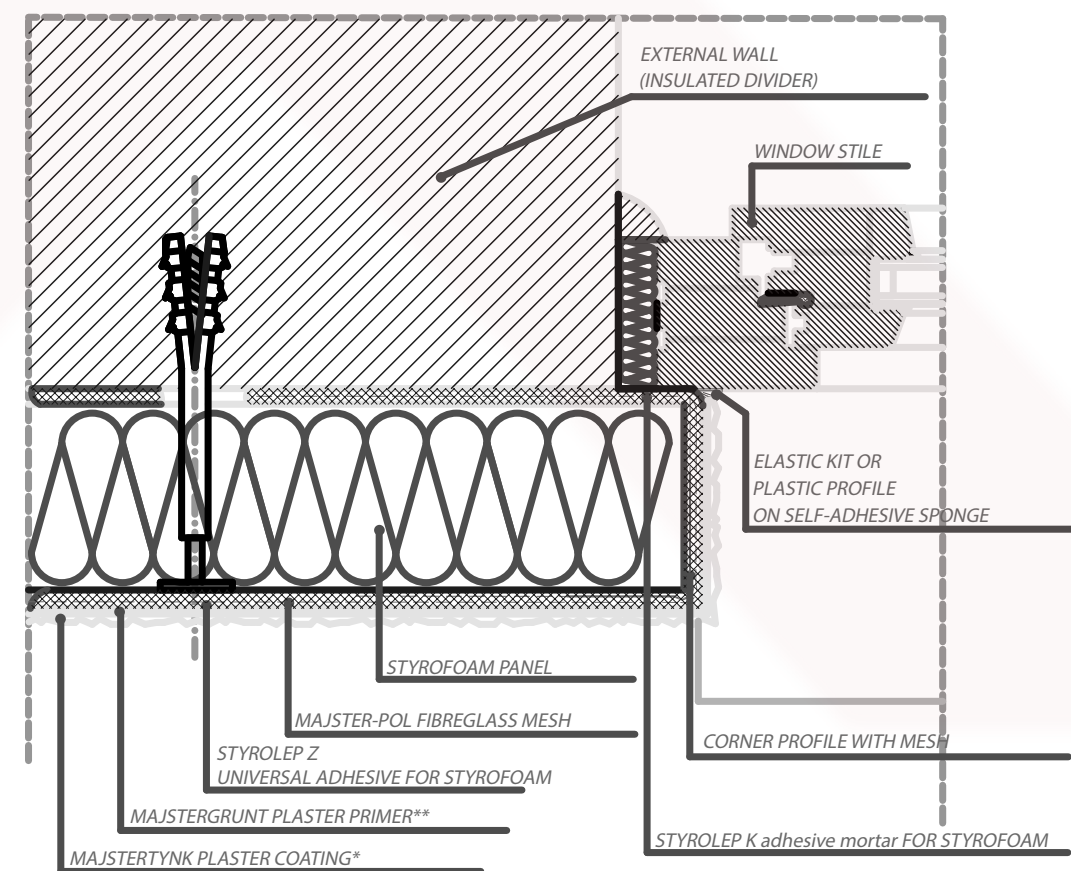


Fig. 7-6. Closeup of thermal insulation of the divider by the window compatible with the insulated wall. (horizontal cross-section)



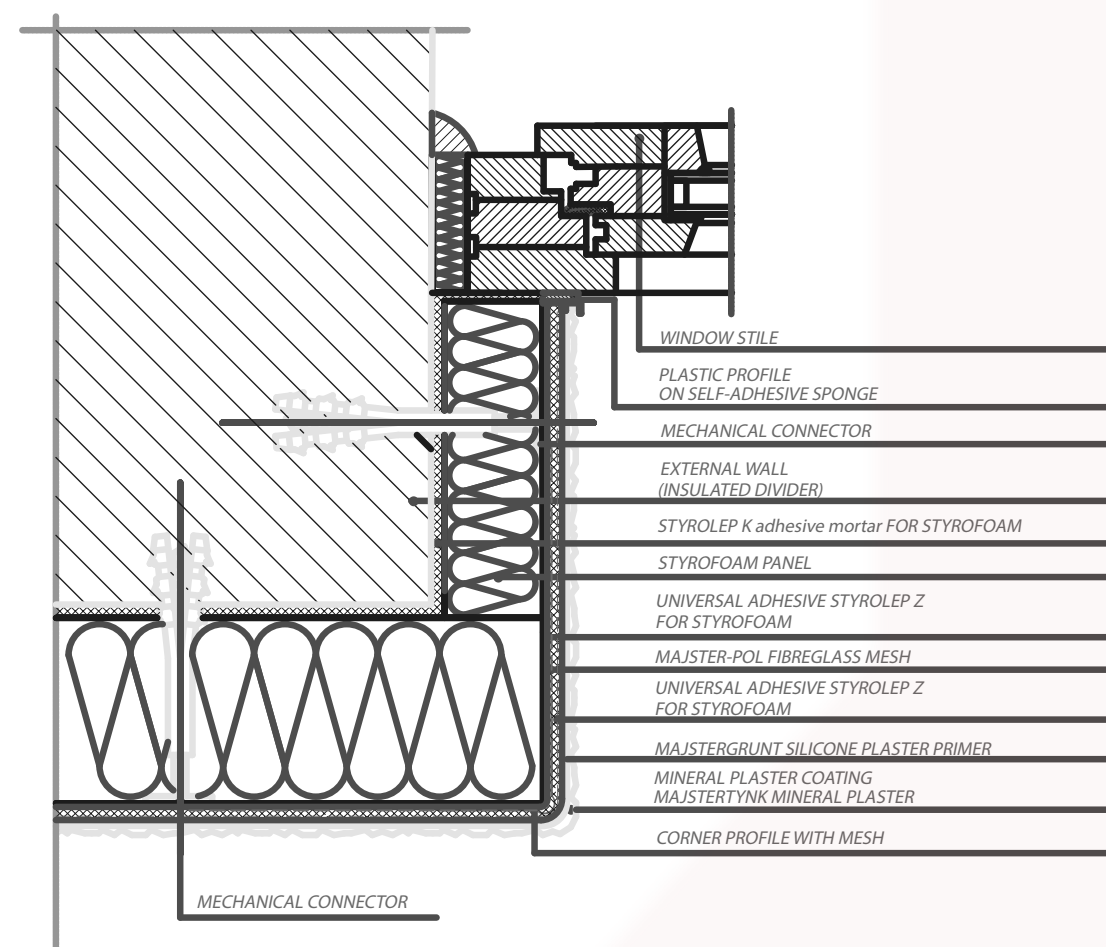


Fig. 7-7. Closeup of the jamb insulation. (horizontal cross-section)

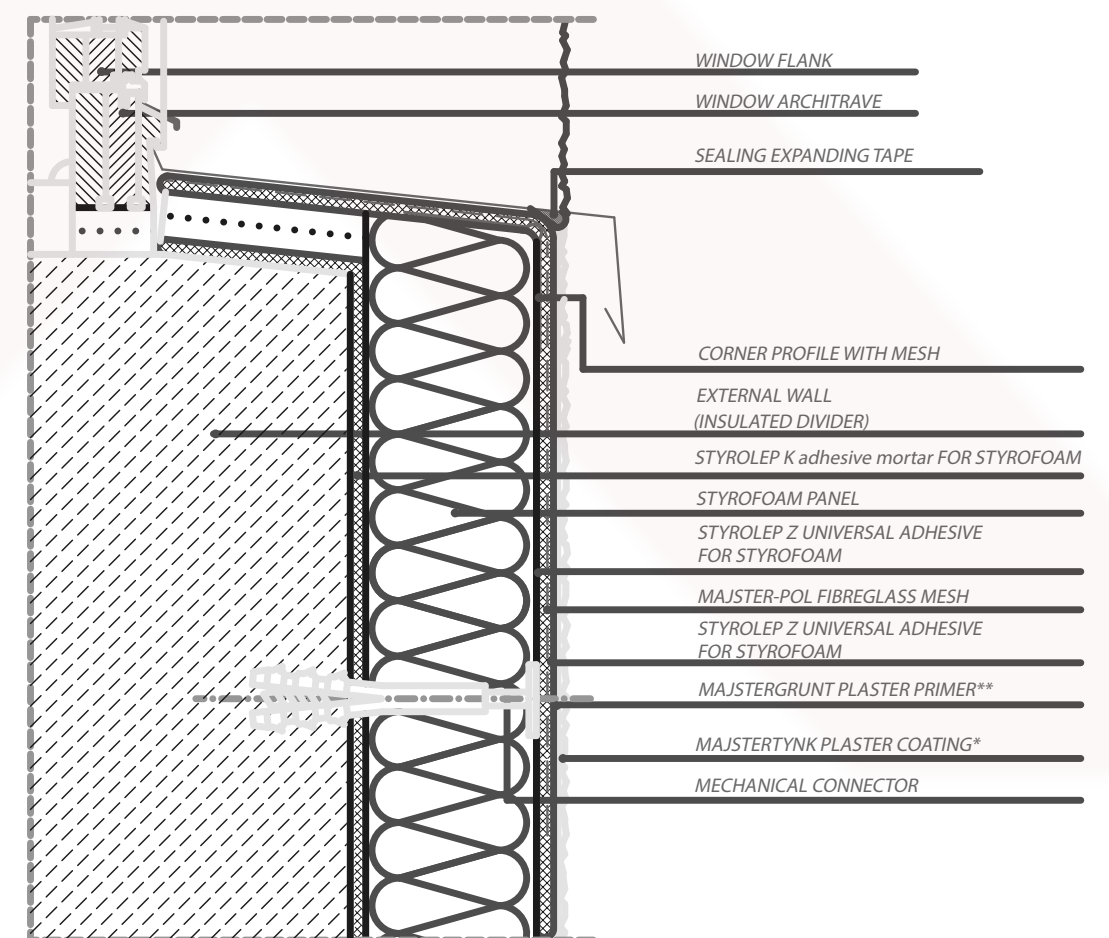


Fig. 7-8. Closeup of window sill treatment. (vertical cross-section)

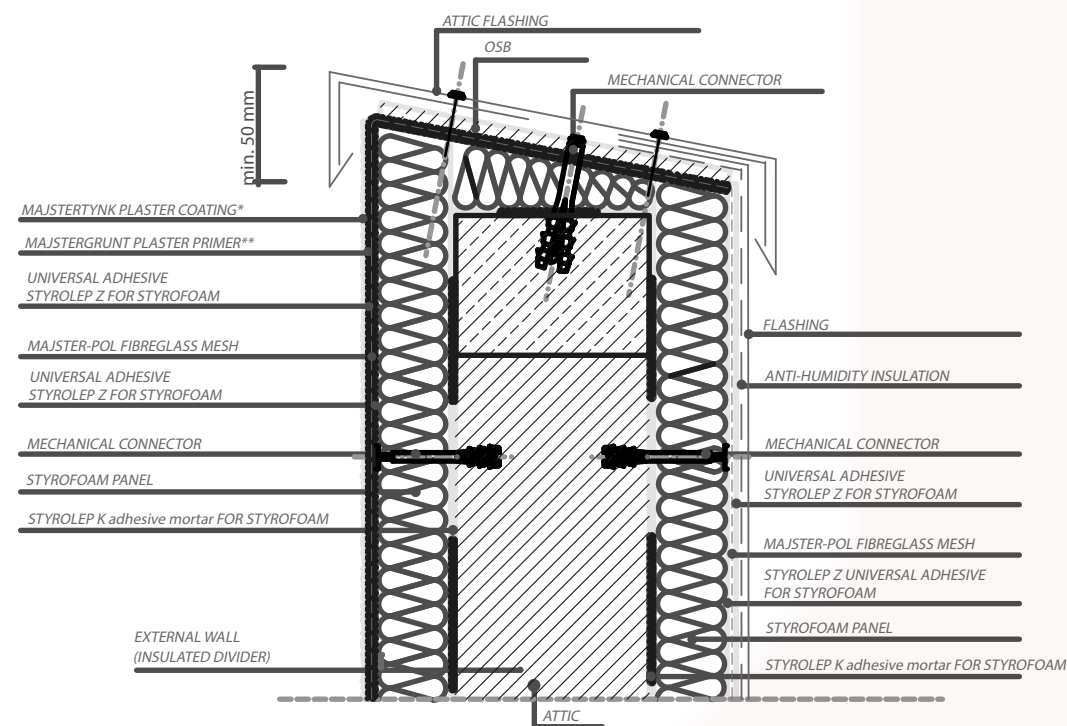


Fig. 7-9. Closeup of attic thermal insulation. (vertical cross-section)

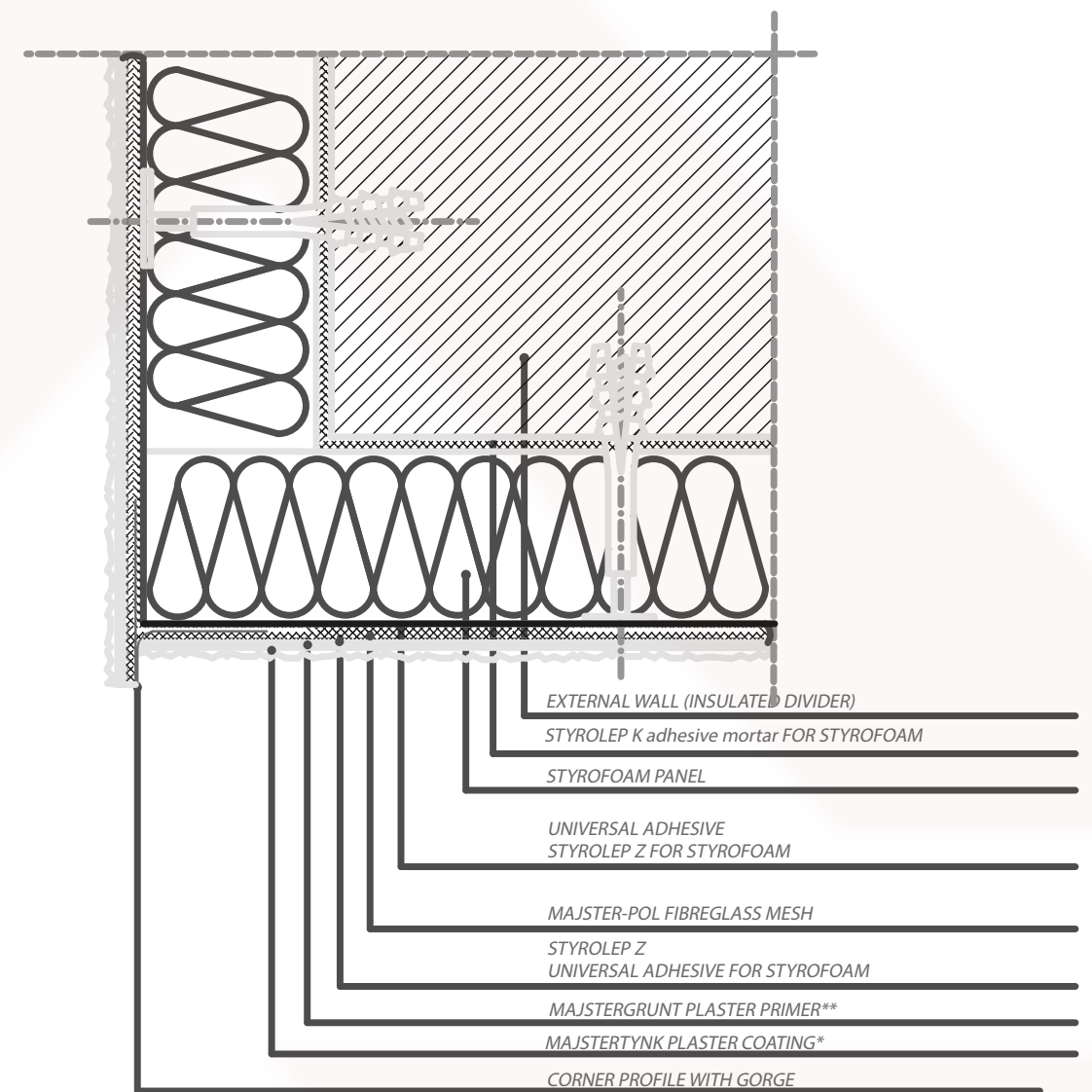


Fig. 7-10. Closeup of arcade corner thermal insulation. (horizontal cross-section)



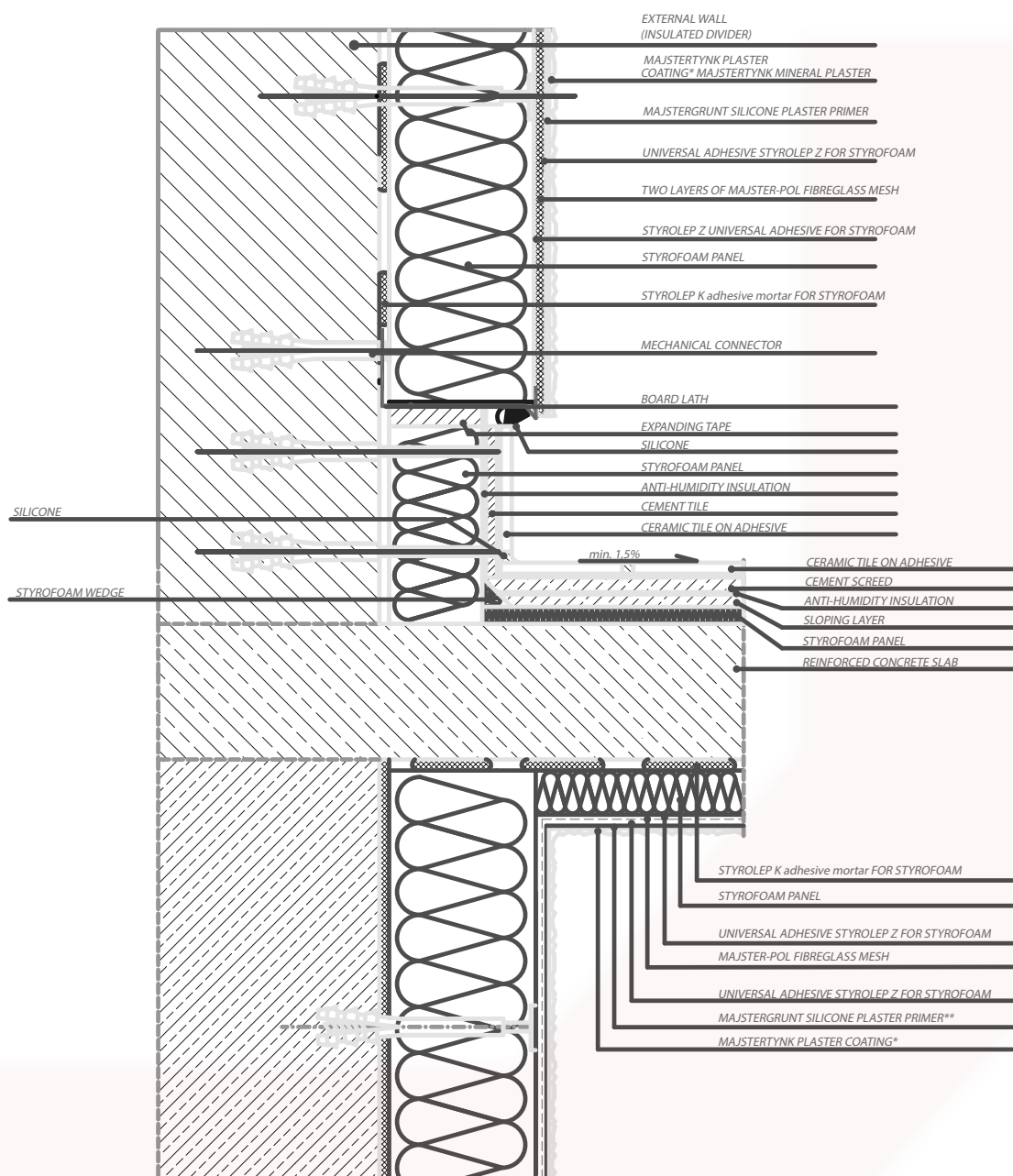


Fig. 7-11. Closeup of wall thermal insulation when combined with a balcony or loggia. (horizontal cross-section)