Product Instruction Sheet:

Mineral Wool Wall Cover Panel
W. MW 5.15

Packaging

The mineral wool wall covering panels are packed in bundles. In order to protect the external facings from scars and scratches, the panels are piled up in the bundle one on the top of the other without being pulled.

Under the bundle, expanded polystyrene block supports are placed in order to protect and facilitate the transport by crane or by forklift.

The entire bundle is wrapped with a transparent polyethylene film in order to protect the products from environmental conditions, according to the bundling machine boundaries.

Upon request, it is possible to place a self-adhesive transparent polystyrene film on the outer surfaces of the panels to protect the paint coating against mechanical damages.

The adhesive film should be removed immediately upon receipt of the product and in no case later than 4 weeks after the date of manufacture. Panels with adhesive film should never be exposed to rain and solar radiation.

The dimensions of the bundle vary. The table on the right shows the number of panels in the bundle, the overall height of the bundle and the weight per length (meters), in relation with the thickness of the panels.

The overall width of the bundle does not exceed 1200mm.

The total length of the bundle depends on the desired panel length of each order and is from 2m to 14m.

The total height of the bundle depends on the desired panel thickness of each order and is not more than 1000mm.

Nominal panel thickness	Number of panels per bundle	Overall bundle height	Weight per meter of length
[mm]		[mm]	[kg/m]
50	16-16-16	800 / 2700	222 / 665
60	14-13-13	840 / 2700	204 / 583
80	10-10-10	800 / 2700	169 / 508
100	8-8-8	800 / 2700	149 / 446
120	7-7-6	840 / 2700	146 / 417
150	6-5-5	900 / 2700	144 / 383

Shipping

The transportation of the shipments is made by truck carriers by land using the road network. Upon request or if the conditions require, it is possible to dispatch the products in containers. It is necessary to use special equipment for loading and unloading products.

In case of transportation with container, table values do not apply. Packages and dimensions depend on the type of the container. They are suitably matched for full volume coverage. The technical department of the company can carry out a preliminary loading assessment, upon request.

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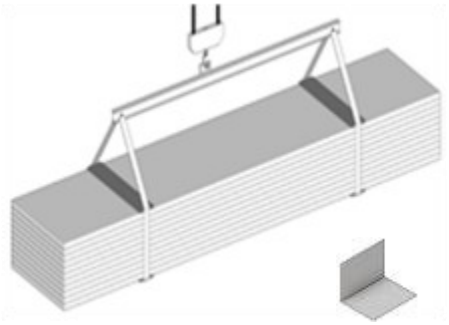
Product unloading



The unloading of the bundles can be done either by crane or by forklift. It is a procedure that falls under the customer's responsibility.

Unloading by crane

The bundles are hung with synthetic fiber straps at least on two points. The distance between the straps must not be less than half the length of the panels. Commonly the distance between the straps is the 3/5 of length of the panels. It is recommended to use synthetic fiber straps with a width of not less than 100mm. It is not advisable to use chains or wire ropes.

Wooden or plastic planks can also be used as spacers. Their length must be greater than the width of the panels (40mm) and their width at least the same as the width of the straps. We recommend the use of 1 mm thick metallic angles and twice the width of the straps at the points of contact of the straps with the bundle to avoid deformation of the panel edges.

Lifting devices must be secured to prevent slipping. Movements should be done carefully, slowly and gradually.

Take into account the total weight and length of the panels as well as the possible bending of the bundle. The bend arrow must not exceed the maximum permissible limits.

Unloading by forklift

It is recommended to use forklift trucks suitable for handling panels or related products with the possibility of bearing extension attachments for the distance between the forks.

The width of the forks must be at least 250 mm and the distance between them not less than 2 m. The final opening should be not less than the 3/5 of the length of the panels.

Storage

The bundles can be stored on the ground on top of supporting boards. They can be stacked on top of each other, but not more than 3 bundles per stack.

They can be stored either indoors or outdoors. In any case they must be protected against environmental conditions. It is recommended to remove the package (film) before storage.

Storage time **indoors** should not exceed 6 months and the storage room should be dry and well ventilated. Storage time **outdoors** should not exceed 60 days. It is recommended to place the bundles with 5% slope for the drainage of the rainwater.

As long as the paint coating is unattached the panels are protected against oxidation.

It is generally advisable to install the panels as soon as possible and not later than 1 month from the day of receipt.

When transporting using containers, bundles must be unloaded in less than 15 days.

Protect the panels from direct sunlight, rain, moisture, dust and from mechanical damages.

Handling

Always use Personal Protective Equipment (such as protective gloves, safety shoes, workpieces, etc.) in accordance with the regulations. Do not use metallic tools and lifting devices that may damage the panels or the coating.

Generally handling the panels is a two persons job. Lift the panel and place it carefully upright next to the bundle. Do not drag the panels together. Avoid in any case to damage the surface coating.

The panels are transported in a vertical position by personnel comprising at least two people. The number of people depends on the length.

It is strongly recommended not to place packages on high-rise constructions.

Otherwise, secure and anchor the packages in order to avoid the risk of a fall that can lead to serious or even mortal injury.

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Installation

The panels should only be installed by qualified personnel with appropriate knowledge and experience. Always refer to the construction plans for proper installation. Additional instructions can be provided by the technical department of the company.

To avoid unnecessary looses and damaging the panels, use the appropriate equipment and tools. A circular saw or a jigsaw can be used to cut the panels, on site. The use of abrasive and friction discs are not recommended. Also suitable are drills and screw drills, without impact, with adjustable torque.

- The mineral wool wall cover panels are designed to cover the external vertical or lightly inclined facades of the buildings.
- They can also be used for the construction of internal vertical partitions for the partitioning of the building.
- They can also be used for the construction of horizontal partitions (roofs) which do not carry loads other than the weight of the installer.

Finally, their use extends to the construction of cold or warm store rooms under conditions with operating temperatures from -25 ° to 90 ° C.

Vertical cladding

In both visible and hidden fixing, panels can be installed either vertically or horizontally. Vertical cladding is the most common and up to 14m long panel covers all buildings with a height of up to 14m.

Under vertical cladding, the facade of the building can be covered with one-piece floor-to-roof panels. The main advantages of this procedure are the reduction of panel-to-panel joints and therefore:

- Decrease of the thermal bridges to a minimum
- Excellent fire resistance
- Restriction to air and moisture penetration
- Minimize installation time
- Limited use of additional accessories

The installation direction depends only on the manufacturer of the project that has specified the direction of coverage.

The following figures give a schematic illustration of the cover direction. Figure 1 shows the vertical cover of an external wall.

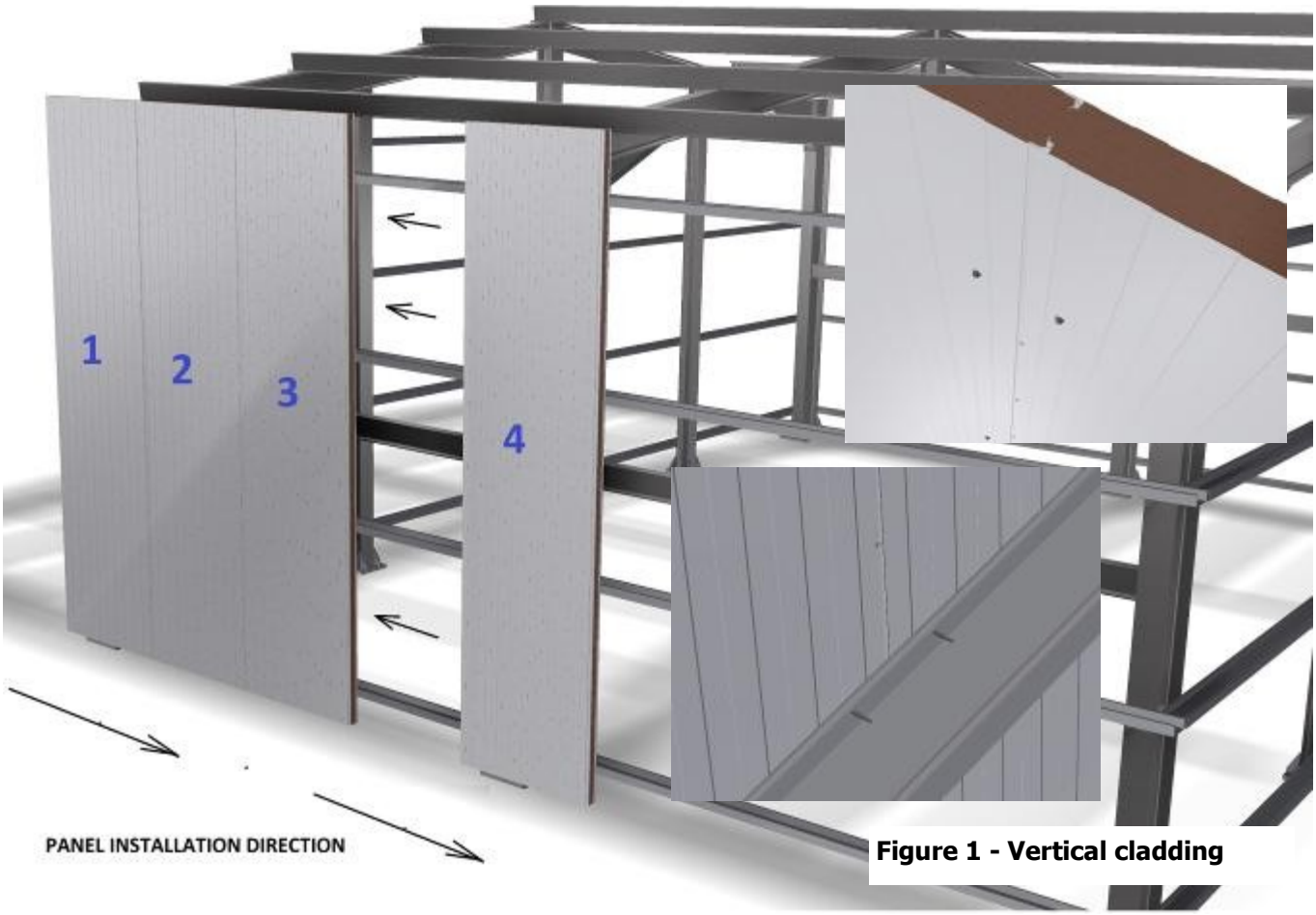

Figure 1 - Vertical cladding

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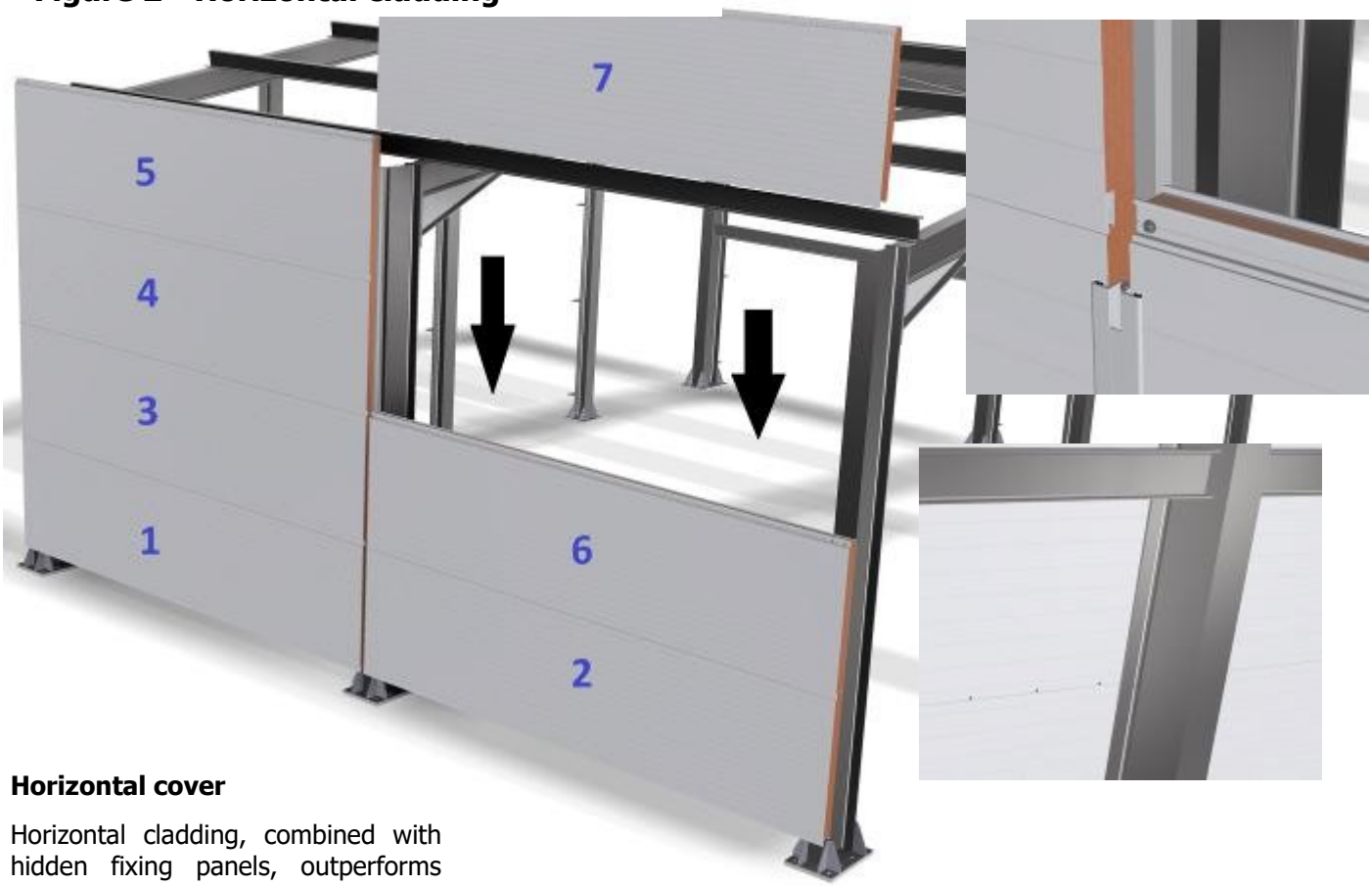
Figure 2 - Horizontal cladding



Horizontal cover

Horizontal cladding, combined with hidden fixing panels, outperforms the vertical where architectural and aesthetic requirements are high.

However, it requires the use of special parts and accessories to cover joints as well as specialization in their application. Additional instructions are provided by the technical department of the company.

Figure 2 shows the horizontal cover of an external wall.

The mineral wool wall panels are designed for external walls. For installation instructions on internal walls or chambers, please contact the technical department of the company.

Sealants

In any case, in order to achieve the best possible sealing result, it is required the use of sealants in the joints and in the panel to panel contacts.

Sealants are not included in the order. It is possible to supply these sealants upon request. Sealants are applied on site during the installation of the panels, not at the factory.

To achieve the best possible sealing results, it is recommended to use sealants with high fire resistance and water resistance.

In particular, it is suggested to use acrylic or butyl acrylic sealants on the internal side of the panel, which offer the best possible resistance to fire.

While on the external side of the panel are preferred silicone base sealants, whose waterproofing characteristics are more effective.

Fasteners

The mineral wool panels are fastened to the structure by the visible or hidden fixing method.

The dimensions of the screws vary depending on the panel itself (thickness, weight, laminates and etc.) and are determined by the designer engineer of the structure.

Typically self-tapping screws with hexagonal head and washer with sealing ring are used. Their material can be high-strength steel or stainless steel. Their type depends on the material of the structure.

It is also proposed to use self-tapping screws for stapling the metal faces between the panels that contribute to sealing the joints.

These can be stainless steel self-tapping screws with or without color coating. The usual type of this screws is 4.3x19mm.

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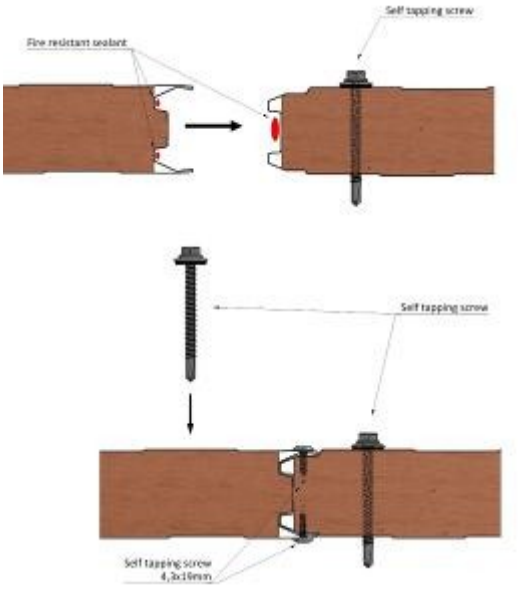
Assembly

The assembly process is simple when it is made by qualified personnel. The key points of the process are the following:

1. First install the accessories that will not be accessible after the panel installation.
- The accessories and flashings such us starter brackets, angle covers, drip flashings, should be designed in cooperation with the manufacturer.
2. The first panel is placed, aligned and secured to the purlins or beams.
3. Next, sealant is applied along the panel joints, as the figure shows.
4. The next panel is lifted and snapped to the previous one. It is aligned, pressed and secured in that position.
5. The panels are cut on the construction site in advance to form the openings of the buildings and then they are placed as mentioned.
6. The process continues until the entire wall is covered. Then proceed to the next wall of the building.
7. At the end, decorative and cover accessories are placed



*** Note:** Panels should be joined correctly before fastening. To deal with the natural phenomenon of EXPANSION, panels should be drilled in advance and the support holes must be at least 2 mm larger than the support screws

Pay great attention to the fitting and do not leave gaps in the joints. Gaps have a significant impact on the fire proofing and the waterproofing efficiency of the construction.

The **visible fixing joint** panels are fastened to the structure by the visible fixing method. In the **vertical cladding** the panels are fixed to the girts while in the **horizontal cladding** they are fastened to the beams (IPE, HEA).

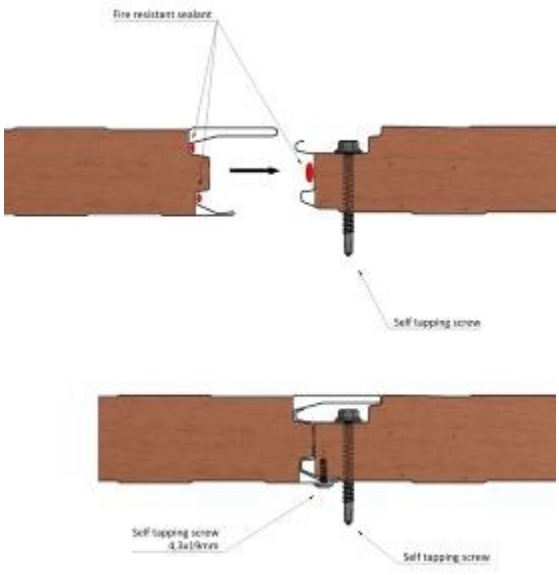
- Each panel is fastened with at least 3 screws at the first and last support (girt).
- Regarding the intermediate supports, 2 screws on each support at 10cm from the edges of the panel is sufficient.
- At the openings, the panel is fastened according to the manufacturer's instructions
- For full fire protection, joined panels are stapled externally and internally with screws, eg 4,3x19mm.

The **hidden fixing joint** panels are fastened to the structure without the screws being visible beyond the beginning of the panel.

- In the **vertical cladding** the panels are fixed to the girts while in the **horizontal cladding** they are fastened to the beams (IPE, HEA).
- The first panel of the wall is fixed with 2 screws per support, while the rest with only 1 screw per support.
- At the openings the panels are fastened according to the manufacturer's instructions
- For full fire protection, joined panels are stapled internally with screws, e.g. 4,3x19mm.

At **horizontal** cladding, in both visible and hidden fixing, the vertical panel joints require a particular sealing. Our company has designed and developed a sealing joint system for this case.

Contact the Technical Department for construction information.



<u>Note:</u> Waves, which only occur after installation at the building-site, may or may not appear on the outer surface of the panels. Please consult the brochure insert: <u>Waves on PU panels v1.2</u>

It is important that the vertical joints between the panels should be supported by beams or secondary steel supports.

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Important Installation Notes

- Always use Personal Protective Equipment and always follow the hygiene and safety rules and regulations
- Always use the appropriate tools to handle panels for both processing and transport.
- It is permissible to make minor corrections to any deformations that may arise from the handling of the panels
- Ensure that the structure is intact and perfectly aligned
- REMOVE the protective adhesive film of the panels if any.
- Pay close attention to properly installing the panels so that they fit correctly before install them in the structure.
- Proceed gradually, it is preferable a short delay at the beginning rather fixing the mistakes later.
- The panels must be properly aligned and have a perfect snap
- Do not leave gaps at the joints. If there are gaps, the panels lose their properties (thermal insulation, fire resistance, air permeability, water permeability)
- Do not omit the use of sealants and do not use them sparingly.
- Use suitable sealants that are weather resistant and do not corrode the metal face of the panels.
- Pay attention to the coating of the plates. The panels do not wear over time as long as their coating remains intact.
- Select materials and components resistant to galvanic erosion, especially when there are various metals that come in contact.
- The tightening torque of the screws must be such as to secure the panel without deforming it
- Do not burden the panel with your weight when screwing in because it can be deformed and not clamped
- Complete the installation by placing decorative and protective accessories.
- Carefully clean the roof without damaging the coating, especially from metallic objects that can be oxidized.
- Wash the structure creating a rainfall in order to check for possible leakages.

Vacuum lifting devices

Professional vacuum lifters offer security and speed in installing panels to cover roofs or walls. Some of the advantages of these are the following:

- They offer security and improve working conditions by relieving staff from handling heavyweight panels (a prerequisite is to comply with safety rules)
- Saving and reducing the workforce for the construction of the project. Saving time and reducing construction costs
- Reduce damage to products after removing the clamping and lifting accessories that come into contact with the panels
- Flexibility due to their operation with rechargeable batteries

The company has the ability to dispose of such devices **(Clad-Boy)** upon agreement. Together with the device to the person concerned, the instructions for use and handling of the device are sent. Before operating the device, read the operating instructions care-

Clad boy quarantines easy, fast and safe installation of the panels in all kind of buildings

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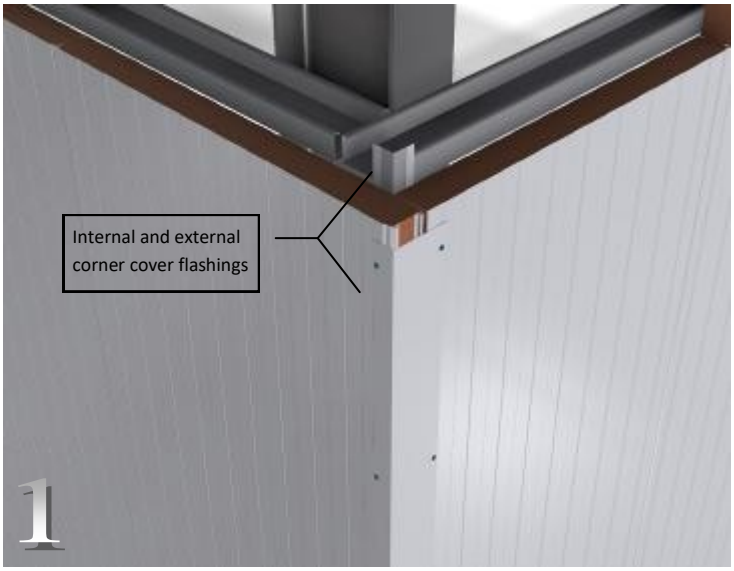
Construction details

1. External corner construction detail

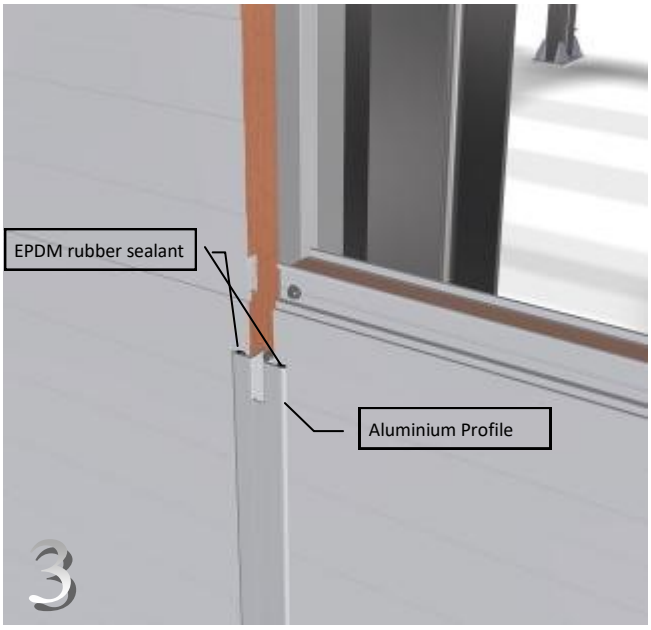
At the exterior corner of the building, the inner sheet of one of the corner panels is cut off so the panel cores contact together, removing any thermal bridges. Sealants and corner flashings are installed inside and outside of the corner wall for sealing and decorative purposes.



2. Openings construction detail

The panels are cut on site to form the openings before installation. At the end, protective and decorative flashings are installed.

Install all types of accessories using self tapping screws 4,3x19mm or others provided from our company, as shown in the figures. For more details and applications, contact the company's design department



3. Vertical joint construction detail

At the horizontal cladding, the vertical joint is covered with a special piece, an aluminum profile with EPDM sealant rubbers. The EPDM rubbers are positioned in such way to protect the insulation of the wall from weather effects. The aluminum profile is designed in such way to be practical in the installation and have excellent aesthetic result.

4. Construction details of the wall base started bracket and rain drainage

At the floor level, it is possible to install starter brackets which support the panels and special water protection flashings (drip flashings). Such as flashings block the intrusion of rainwater inside the building.

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Technical Support

The company has the ability to provide Technical Support before, during and after construction.

Contact us and ask for instructions and additional information such as:

- **Calculation of coverage areas**
- **Special construction details**
- **Tips for fire protection, thermal insulation and sound insulation**
- **Development and design items with specified use.**

Maintenance

Self-supporting insulating panels are products that require little or no maintenance. Any maintenance required is mainly limited to cleaning. However, it is advisable to carry out an annual check, which includes:

Cleaning check. If necessary, wash the panels with water and soap using a soft brush. You can use scrubbers and pressure water jets, but not high pressure (<50bar), and do not have the nozzle perpendicular to the surface.

Coating control. If marks or scratches are observed on the paint coating, repair and repaint the surface.

Check the screws. Retighten or replace the screws that have loosened.

Check accessories. Check the accessories, gutters, end pieces, ridge caps, etc. for oxidation, if necessary clean and repaint the pieces.

Quality & Reliability

The rapid service of our customers' needs, combined with our modern technological equipment, our well-trained staff and our dependable products, place Metallemporiki - Th. Makris SA among the leading companies in the sector.
The company applies a Quality and Environmental Management System in accordance with ISO 9001 and ISO 14001 standards and guarantees the durability and reliability of its products.
The company's panels comply with building regulations and with EN 14509 European Norm.
> In addition to this Instruction Data Sheet, the products are accompanied by the Product Data Sheet, the Declaration of Performance, the CE marking, and all the necessary legal documentation.

Note

All information can be used as a general guide but in no case as a technical manual and the company can not be held responsible if damage is caused to it.

The laws, regulations and standards of different countries vary and change. Contact our technical department for additional information.

METALLEMPORIKI
TH. MAKRIS S.A.

Manufacturers of Cladding Products for the Construction Industry

6th km Larissa - Sikourio, Larissa, Hellas
9th km Larissa - Agia, Larissa, Hellas
+30 2410 575 207
+30 2410 575 206
sales@metallemporiki.gr
www.metallemporiki.gr