



 A BRIARWOOD COMPANY



Insulated Roof PIR Panels



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Insulated Panels

Insulated panels are versatile roofing and cladding solutions designed for pitched roofs and vertical walls. These panels are not only multifaceted but also uniquely crafted to fit a range of settings, from agricultural and industrial to commercial spaces.

With hundreds of 30mm and 80mm composite panels readily available, we guarantee immediate dispatch to meet your construction needs promptly. Choose our insulated panels for a blend of functionality, aesthetics, and top-tier quality.

As the UK's premier stockist, we pride ourselves on our extensive inventory of insulated roofing sheets.

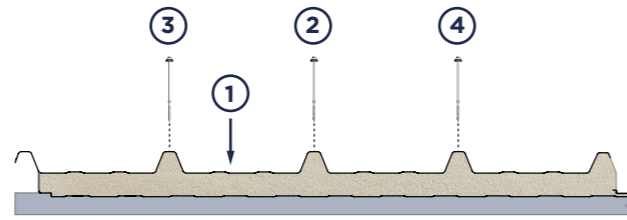
Advantages

-  **User-friendly** Our insulated panels are not only easy to handle but also straightforward to install. For a step-by-step guide, refer to our dedicated insulated panels document containing comprehensive fitting instructions.
-  **Efficient installation** With insulation pre-integrated into the product, you can expect a significantly reduced installation time, streamlining your construction process.
-  **Quality assurance** Our panels are not only CE marked but also adhere to the ISO 9001 standards, ensuring you receive a product of the highest quality.
-  **Superior thermal efficiency** Designed for optimal thermal performance, these panels ensure energy efficiency and consistent temperature regulation.
-  **Robust and durable** Despite their lightweight nature, these panels are crafted to bear moderate weights, ensuring longevity and resilience.
-  **Extended lengths** Catering to diverse requirements, our 30mm and 80mm insulated panels are available in lengths ranging from 3.075m to 7.075m.

Installation guide

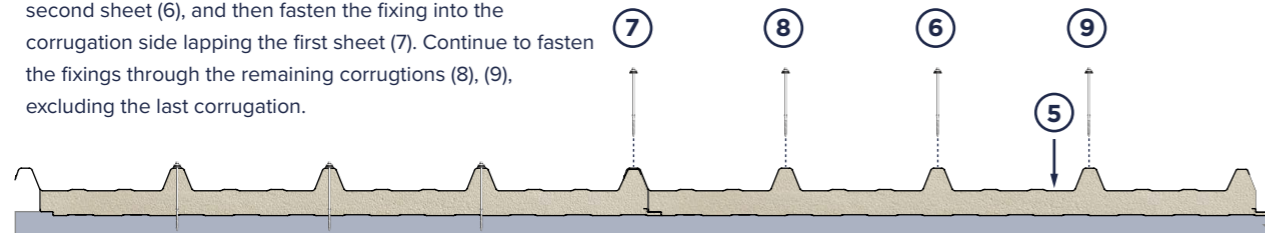
1 LAY FIRST SHEET AND FIX

Install the first sheet whilst paying attention to the alignment (to ensure it is straight). Once the first sheet has been laid (1), fasten the fixing through the central corrugation (2), and then continue to fix through the remaining corrugations (3), (4), excluding the first corrugation and last.



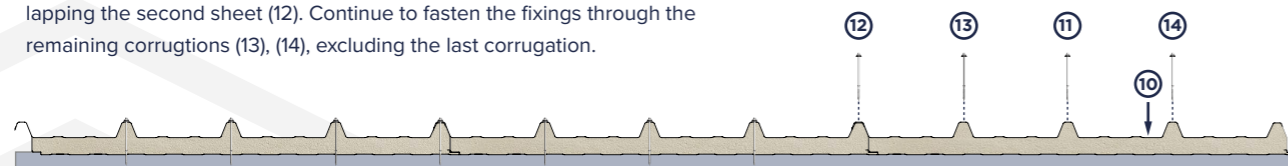
2 LAY THE SECOND SHEET AND FIX

Once the first sheet has been fixed into place, place the second sheet where the empty corrugation side laps onto the first sheet (5). Fix the second sheet into place by fastening the fixing through the central corrugation of the second sheet (6), and then fasten the fixing into the corrugation side lapping the first sheet (7). Continue to fasten the fixings through the remaining corrugations (8), (9), excluding the last corrugation.



3 LAY THE THIRD SHEET AND FIX

Once the second sheet has been fixed into place, place the third sheet where the empty corrugation side laps onto the second sheet (10). Fix the third sheet into place by fastening the fixing through the central corrugation of the third sheet (11), and then fasten the fixing into the corrugation side lapping the second sheet (12). Continue to fasten the fixings through the remaining corrugations (13), (14), excluding the last corrugation.



PROPER APPLICATION OF THE FASTENERS

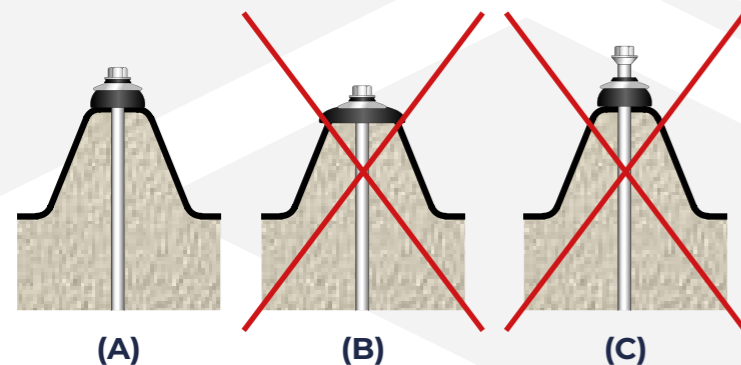


Figure A. represents the correct tightening of torque applied to the fixing which is sufficient enough to guarantee the fastening of the insulated panel to the structure.

Figure B. represents the fixing being tightened too much through the corrugation.

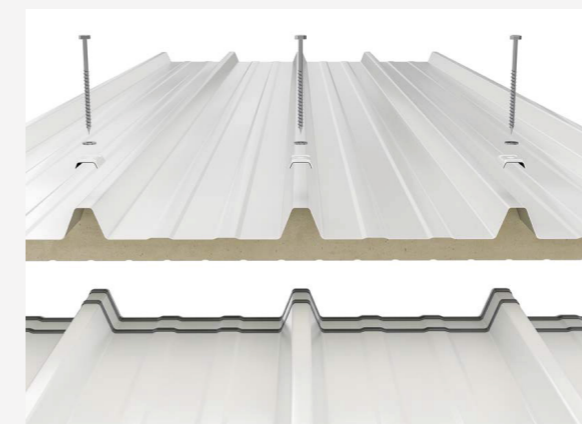
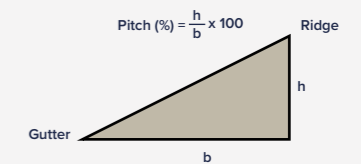
Figure C. represents the fixing not tight enough through the corrugation which can lead to the panel moving around in areas of high wind, or moving due to heat expansion.

Assembly sequence

By following this sequence, you'll ensure a smooth and effective assembly process.

- **Initial Setup:** Assemble eaves, potential under-ridges, and connecting ridge caps.
- **Preparation:** If present, remove the protective film from the roofing component and its accessories.
- **Component Installation:** Begin installing the roof components from the eaves and one side of the building. Ensure proper overlap, alignment, and orthogonality relative to the underlying structure.
- **Securing Components:** As you affix components, ensure panels are closely pressed together. After every 4 panels, verify the total measurement, which should match the combined span of each panel ± 5 mm. Improper installation can result in issues like condensation or misalignment at the ridge.
- **Layering:** Install subsequent rows of components above the eaves row. If using panels, strip the insulation in the overlay area first.
- **Fastening:** Secure components near all prominent features like ridge lines, eaves, and head overlays.
- **Finishing Touches:** Install finishing elements like ridges, ridge caps, and general metal sheets, along with their respective insulations.
- **Cleanup and Inspection:** Clear the roof of any leftover materials, especially metal fragments. Conduct a thorough review of the roof, focusing on fastenings and connections with other roof components.

Pitch, Endlaps and Sealing



Depending on the percentage on which the roof is sloping, it is important to use the corresponding seal and endlap measurements show on Figure A.

IMPORTANT: The insulated panels should not be installed on slopes lower than 7%.

PITCH AND ENDLAP TABLE Figure A.

Roof Slope (%)	Minimum endlap	Seal
from 7 to 10%	300mm	Double sealed
from 10 to 15%	250mm	Double sealed
greater than 15%	200mm	Double sealed

Size of fixings

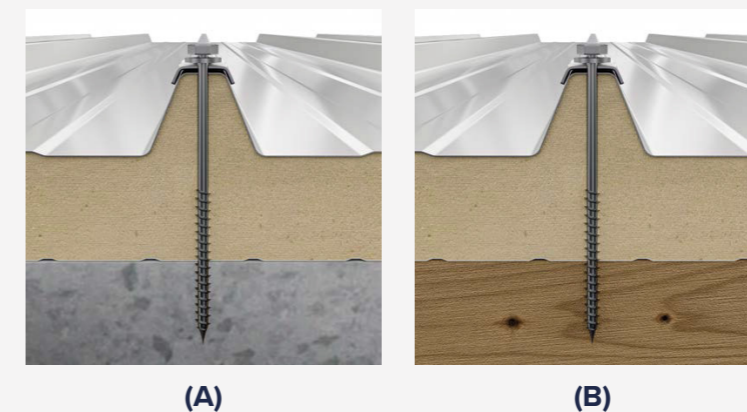


Figure A. represents structural fastening of the roof panels on a metal support structure

Figure B. represents structural fastening of the roof panels on a metal support structure

Insulation thickness	Purlin material	Recommended fixing
30mm	Timber	Ø 6.5 x 100mm
30mm	Metal	Ø 6.5 x 100mm
80mm	Timber	Ø 6.5 x 150mm
80mm	Metal	Ø 6.5 x 150mm

Design guidelines

A roof should meet these fundamental technical criteria:

- Manage heat transfer via the insulation layer.
- Ensure proper ventilation to prevent interstitial condensation.
- Maintain waterproofing with an effective external seal.

During the design process, also consider:

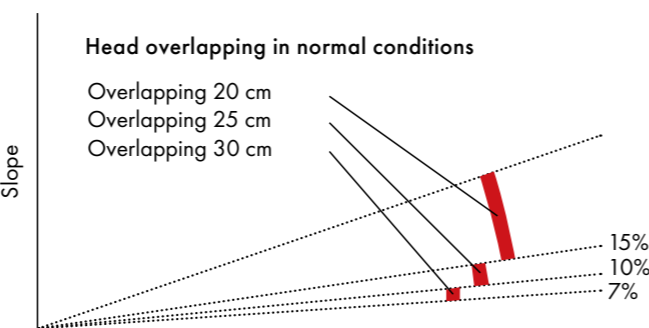
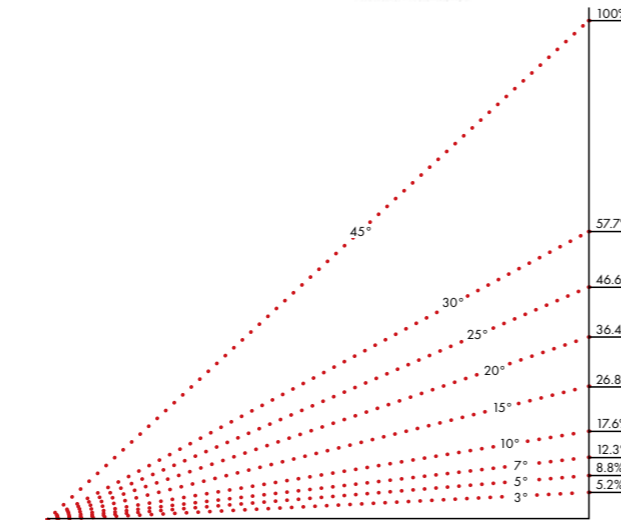
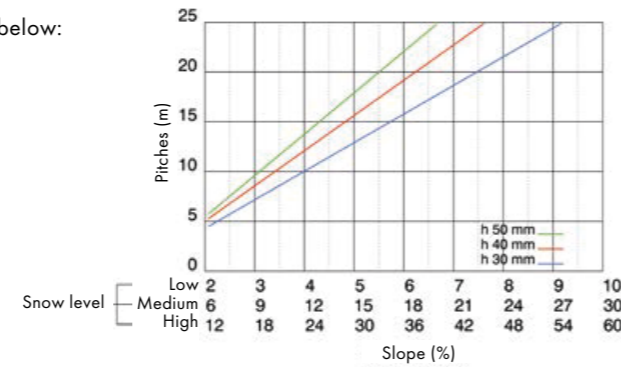
- The compatibility of the materials in terms of physical, mechanical, and chemical properties.
- Ensure the design aligns with objectives like safety, comfort, energy efficiency, longevity, and ease of maintenance.

The structural framework should be consistent and flexible enough to handle external pressures without causing permanent deformations or dents on the metal base.

Key factors to account for include:

- **Wind Impact:** Refer to relevant regulations and the UNI EN 1991-1-4:2010 standard for calculations. Italy is categorized into 9 zones with wind speeds ranging from 25 m/s to 31 m/s. Negative wind pressures combined with potential internal pressures can result in stresses over 2 KN/m². The anchoring system requires careful consideration.
- **Snow Impact:** Follow applicable laws for calculations. Prevent uneven snow buildup and water pooling by ensuring effective water drainage.
- **Environmental Factors:** Choose supports and finishes based on the specific environment of installation, as per the UNI 8627 standard, section 71.7:
 - Coastal
 - Industrial
 - Urban
 - Countryside
- **Rain and Wind:** These factors dictate the minimum gradient for roof sections to prevent metal oxidation and ensure efficient water drainage.

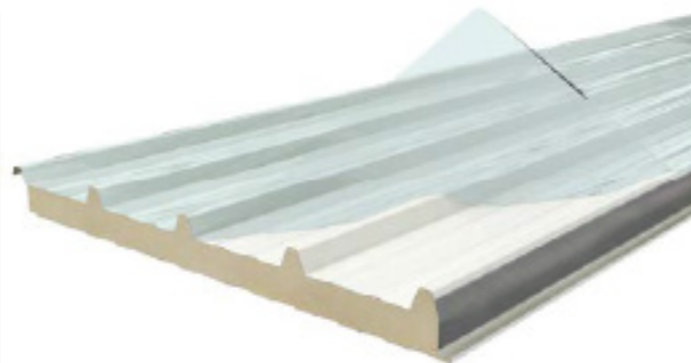
below:



Support protection

Briarwood delivers the product with an adhesive polyethylene protective film to shield pre-painted metal supports. This film should be fully removed during installation or within 30 days of material setup. Panels with this protective film shouldn't be exposed to direct sunlight.

If a customer specifically asks for it, BRIARWOOD can provide the product without the protective film. However, in such cases, Briarwood won't be responsible for any potential damage to the metal support's paint layer.



Thermal expansion and coupling calculation

Installation Details:

- Roof Material: Aluminium
- Pitch Length: 10m
- Metal Temperature at Installation: 50°C

The linear expansion or shrinkage of the metal surface, especially when exposed to strong sunlight or significant temperature changes (like day-night shifts or freezing-thawing cycles), needs to be accommodated by the system. If not, this can lead to stress accumulation near profile changes, resulting in panel deformations like bubbling or cracking, which can affect its structural and mechanical properties. To mitigate these issues, consider:

Given a winter temperature of -10°C, the temperature difference becomes 50°C + 10°C = 60°C. This means the aluminium component will contract by:

$$23.6 \times 10^{-6} \text{ (mm/}^\circ\text{C per m)} \times 60^\circ\text{C} \times 10\text{m} = 14.16\text{mm.}$$

- Avoid dark shades for long panels.
- Choose appropriate metal support thickness.
- Segment the panels.
- Use the right fastening method, as per Briarwoods installation guidelines.

For aluminium panel installations, Briarwood suggests using stainless steel screws with caps and washers. If multiple panels are needed for a pitch, separate their ends by 5-10mm and insert a flexible seal between them to prevent condensation. For any other specifics, consult the UNI 10372 standard and Briarwood sales office.

Loading tables

The table below shows the **single span support centre distances** for the Insulated Roof Panel PIR in 30/80mm thickness.

Insulation thickness	Weight (kg)	1.5m	2m	2.5m	3m	3.5m	4m	4.5m	5m	5.5m
30mm	7.42	250	195	105	70	50	-	-	-	-
80mm	9.32	485	360	265	200	155	120	95	70	50



Handling and storage

Packaging and packing materials

To ensure the longevity and durability of metal roof elements, it's crucial to prevent any damage during storage, transport, handling, and installation. Temporary protection systems, especially for aesthetic purposes, are recommended. Typically, these materials are shielded with a polyethylene film or other solutions during manufacturing

During subsequent phases, ensure:

- Surface protection against abrasion, especially during handling.
- Edge and angle protection against impacts.
- Prevention of water stagnation or humidity condensation.
- Protection against permanent deformations due to weight.

Storage

Metal roof elements are designed for stackable storage to minimize space. However, care should be taken to prevent surface damage during stacking. Packages should always be elevated from the ground, using supports made of wood or foam plastic materials. The support surface should match the package shape, ensuring proper alignment and preventing water stagnation.

For optimal storage conditions, use closed, lightly ventilated rooms free from humidity and dust. Ensure a stable support surface that prevents water stagnation. Avoid placing packages near work activities that might cause damage. If materials have a protective film, remove it within thirty days from the preparation date, ensuring the packages are stored in a shaded, covered, and ventilated location. For storage durations, it's advised not to exceed six months indoors and sixty days outdoors. Always protect materials from direct sunlight.

Figure A. The packs of insulated panels should be inclined to allow all water and condensation dews to run-off (especially when stored outside).

Figure B & C. Care should also be taken to prevent electrochemical corrosion when different metals come into contact, especially during storage. Additionally, be mindful of contraction and thermal expansion effects, which can cause the panels to become convex or concave.

Figure D. It's recommended to avoid stacking packages on top of each other. However, if their weight allows for stacking, use wooden or foam plastic spacers between them. Ensure these spacers have a broad support base and are placed close to the supports of the underlying packages.

Ribbed sheets and panels are typically packaged, with the number of sheets in a package determined by the weight limits of available lifting and transport means. Packaging materials can include wood, expanded plastics, carton, polyethylene film, and others. Bindings are made with straps, often accompanied by corner bumpers for protection. Straps should not be used for lifting.

It's also essential to have clear grabbing points for handling and lifting. The packaging should distribute weight evenly and facilitate handling. Depending on transport methods, packaging specifics should be defined during ordering. Special packaging or element subdivisions based on buyer requirements should be discussed during order placement. The number of panels per package is indicative, with BRIARWOOD's shipping department determining packaging based on production and transport optimization.



Lifting and handling

Packages should always be lifted at two points, spaced at least half the length of the package. Use synthetic fabric belts for lifting, ensuring they distribute the load without causing deformations. Use special spacers made of sturdy materials to prevent direct belt-to-package contact.

For panels up to 6 meters, use cranes with two gripping points. For longer panels, use cranes with sling bars and three gripping points. Ensure the positioning of spacers and straps prevents crushing or damage. Always ensure slings and supports remain stable during lifting and handling.

Inside the premise to be covered, only deposit packages on surfaces suitable in terms of strength and safety. For forklift truck handling, ensure the lift forks are equipped with guards or widths that don't damage the panels. Always secure packages stored at height.

Manual handling should always be done with appropriate Personal Protective Equipment (PPE). Ensure the equipment and protective gloves are clean and won't damage the products.

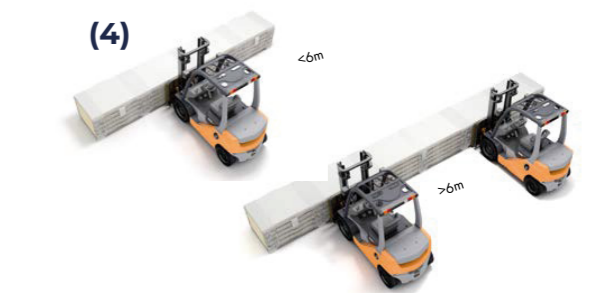
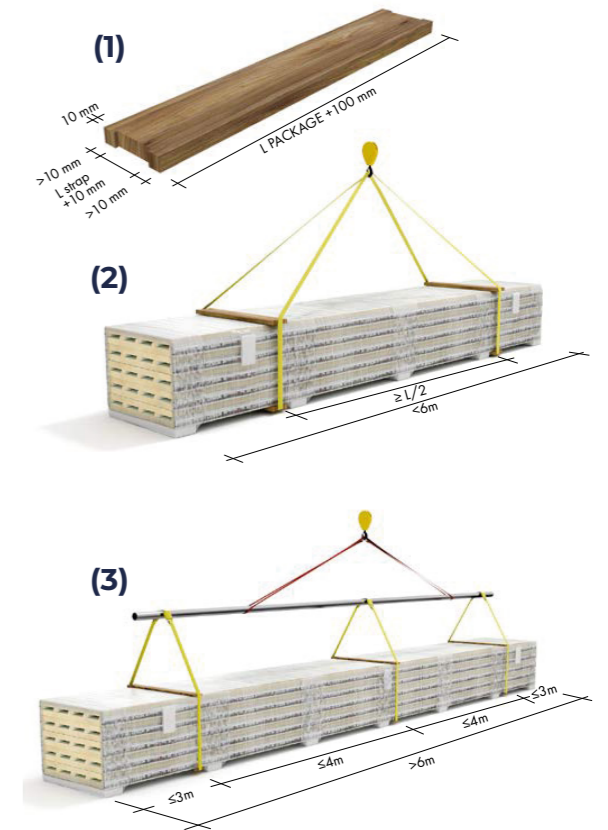
Figure 1. The length of the batton should exceed the package's width by a minimum of 5 cm on both sides. Additionally, its overall width should be at least 30 mm more than the strap's width, with a groove that's its size plus an extra 10 mm.

Figure 2. When lifting and maneuvering panels that are up to 6 metres in length, it's advisable to utilize cranes equipped with straps that have two grip points.

Figure 3. For panels exceeding 6 metres, it's suggested to employ cranes equipped with sling bars and straps that have three grip points.

Figure 4. When using forklift trucks for lifting and handling, it's advised to use a single vehicle for panels up to 6 metres long. For panels exceeding 6 metres, two vehicles should be employed, while adhering to guidelines related to crane, strap, and sling bar usage. Always ensure the forklift's blades are equipped with guards or are of a width that won't harm the panel's surface upon contact.

Figure 5. When manually handling individual pieces, always lift them without dragging across the element below and position them on their side next to the package. Depending on the panel's size and weight, at least two individuals should transport it, ensuring the panel remains on its side throughout.



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