

# Paged



# CE

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# BEST PRACTICES FOR INSTALLING PAGED CONSTRUCTION PLYWOOD

## Paged

offers innovative and sustainable pine construction structural plywood that meets the highest durability standards and satisfies the needs of the most demanding customers. Manufactured from certified wood in one of the most modern facilities in Poland, using state-of-the-art technologies, Paged construction structural plywood stands out for its reliability, commitment to the natural environment, and a healthy setting. It also features resistance to fire, harsh atmospheric conditions such as water, UV rays, mould, and fungi.

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# 1. Load-Bearing and Rigidity Testing of Sheathing

## Best Practices for Installing Paged Pine Construction Plywood

Pine plywood has been tested for strength and rigidity according to PN-EN 1195:1999 standard, „Timber Structures. Test Methods.“ The preservation of the structural integrity of floor sheathing was examined with consideration of PN-EN 12871:2013-11 standard, „Wood-Based Panels.“ The operational properties of panels used for load-bearing applications in floors, roofs, and walls were determined.

### Sheathing made from pine plywood by PAGED, with joist spacing of 400 mm.

| Edge Finish Variant | Nominal Thickness | Central Load Application |                                  |                 | Load Application at Joint |                                  |                 |
|---------------------|-------------------|--------------------------|----------------------------------|-----------------|---------------------------|----------------------------------|-----------------|
|                     |                   | Max Force Fmax, mean     | Deformation under 0.4 Fmax, est. | Stiffness Rmean | Max Force Fmax, mean      | Deformation under 0.4 Fmax, est. | Stiffness Rmean |
|                     |                   | mm                       | N                                | mm              | N/mm                      | mm                               | N/mm            |
| TG 2                | 12                | 6138                     | 4,09                             | 372             | 4593                      | 4,20                             | 362             |
|                     | 15                | 8024                     | 4,32                             | 375             | 6646                      | 4,70                             | 348             |
|                     | 18                | 9809                     | 4,34                             | 541             | 7009                      | 4,96                             | 442             |
|                     | 21                | 11653                    | 3,20                             | 678             | 8753                      | 4,02                             | 585             |
| TG 4                | 18                | 9209                     | 4,29                             | 717             | 6198                      | 4,27                             | 700             |
|                     | 22                | 9768                     | 4,14                             | 557             | 7293                      | 4,37                             | 553             |

### Sheathing made from pine plywood by PAGED, with joist spacing of 600 mm.

| Edge Finish Variant | Nominal Thickness | Central Load Application |                                  |                 | Load Application at Joint |                                  |                 |
|---------------------|-------------------|--------------------------|----------------------------------|-----------------|---------------------------|----------------------------------|-----------------|
|                     |                   | Max Force Fmax, mean     | Deformation under 0.4 Fmax, est. | Stiffness Rmean | Max Force Fmax, mean      | Deformation under 0.4 Fmax, est. | Stiffness Rmean |
|                     |                   | mm                       | N                                | mm              | N/mm                      | mm                               | N/mm            |
| TG 2                | 12                | 4884                     | 5,46                             | 196             | 3999                      | 5,74                             | 186             |
|                     | 15                | 6660                     | 5,65                             | 246             | 4710                      | 6,27                             | 228             |
|                     | 18                | 6796                     | 4,29                             | 336             | 6298                      | 4,58                             | 321             |
|                     | 21                | 9554                     | 4,64                             | 409             | 7185                      | 5,50                             | 352             |
| TG 4                | 18                | 8188                     | 5,92                             | 323             | 5571                      | 6,71                             | 296             |
|                     | 22                | 9640                     | 5,16                             | 396             | 7939                      | 5,55                             | 365             |

### Sheathing made from pine plywood by PAGED, with joist spacing of 800 mm.

| Edge Finish Variant | Nominal Thickness | Central Load Application |                                  |                 | Load Application at Joint |                                  |                 |
|---------------------|-------------------|--------------------------|----------------------------------|-----------------|---------------------------|----------------------------------|-----------------|
|                     |                   | Max Force Fmax, mean     | Deformation under 0.4 Fmax, est. | Stiffness Rmean | Max Force Fmax, mean      | Deformation under 0.4 Fmax, est. | Stiffness Rmean |
|                     |                   | mm                       | N                                | mm              | N/mm                      | mm                               | N/mm            |
| TG 2                | 12                | 4254                     | 6,09                             | 146             | 3311                      | 7,26                             | 122             |
|                     | 15                | 5954                     | 6,79                             | 185             | 5951                      | 8,14                             | 150             |
|                     | 18                | 8145                     | 4,87                             | 258             | 5783                      | 6,08                             | 202             |
|                     | 21                | 9455                     | 4,75                             | 343             | 6806                      | 6,26                             | 272             |

## 2. Storage

Plywood panels should be stored in a dry room on a flat, even surface to prevent material warping.

## 3. Handling Plywood

### When transporting plywood panels

handle them with care to avoid damaging the panel edges or tongue-and-groove joints. After opening, do not move the pallets using mechanical equipment such as forklifts.

## 4. Preparation for Installation

### During Preparatory Work

Plan each step of the work carefully. Gather the necessary tools. If using power tools, such as circular saws, use personal protective equipment (PPE), including protective gloves, goggles, and earplugs.

### Attaching Plywood Panels to Joists and Battens

Use hardened screws with countersunk heads or nails with ringed shanks, at least 2.5 times longer than the thickness ( $t$ ) of the panel being installed.

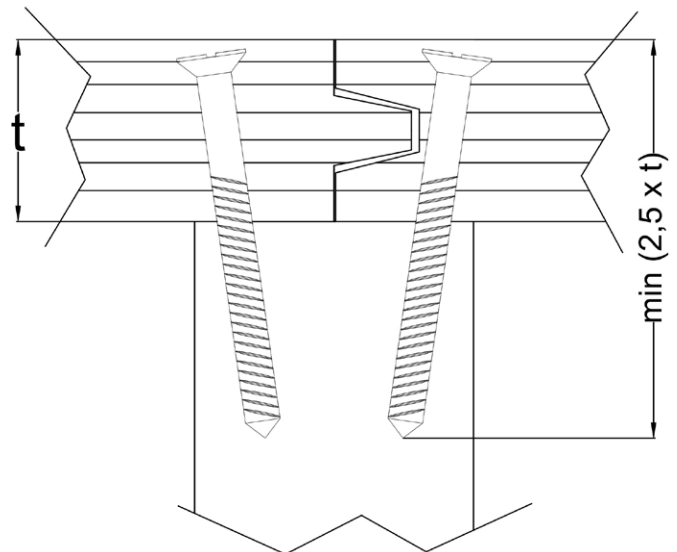


Fig. 1:  
Selection of fastener length depending on the panel thickness.



# 5. Floor Installation

## 5.1 Types of Plywood

**Pine plywood has been specifically designed for floor sheathing.**

Plywood panels are available in three edge finish variants:

- **TG0 – straight edges without additional machining**
- **TG2 – tongue and groove on the longer edges**
- **TG4 – tongue and groove on all four edges**

Thanks to this solution, installation becomes very simple.



### **Paged Softwood ThickPly**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 6–40 mm



### **Paged Softwood ThickPly FR Bfl-s1**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–40 mm



### **Paged DryGuard**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–30 mm



### **Paged DryGuard FR Bfl-s1**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 12–30 mm



### **Paged MouldGuard**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–30 mm

## 5.2 Floor Installation

- Plywood panels should be conditioned/stored for about a week under the same humidity conditions as the final application.
- Based on the intended use, the recommended spacing of joists/supports for the floor installation with plywood is 400, 600, or 800 mm.
- The panels should be laid perpendicular to the joists, ensuring that the short edges rest on the supports.
- Short edges should be staggered (offset) in relation to each other; this is referred to as a „staggered joint” layout.
- Each plywood panel must be supported by joists at least at three points.



## 5.3 Fasteners

- Panels should be attached to joists using metal fasteners—secured with hardened screws with countersunk heads or nails with ringed shanks, with a length of at least 2.5 times the thickness of the panel being installed.
- The minimum distance from the edge of the joist to the fastener should be 10 mm.
- The spacing between fasteners should be:  
150 mm along the short edges of the panels,  
300 mm along the long edges of the panels.
- The minimum diameter of the fasteners should be  $0.16 \times$  the thickness ( $t$ ) of the plywood panel.
- Fasteners should be recessed to a depth of 1–3 mm below the plywood surface.
- Metal fasteners must be corrosion-resistant according to EC5, Table 4.1, depending on the usage class.

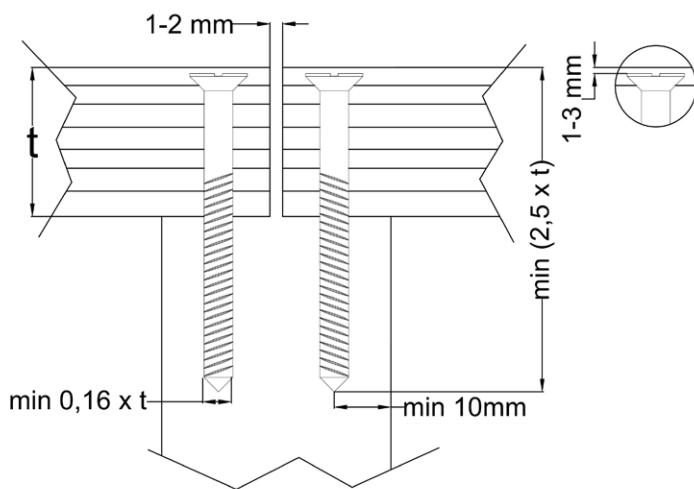


Fig. 2:  
Installation of Paged TG0 plywood  
on floor joists.

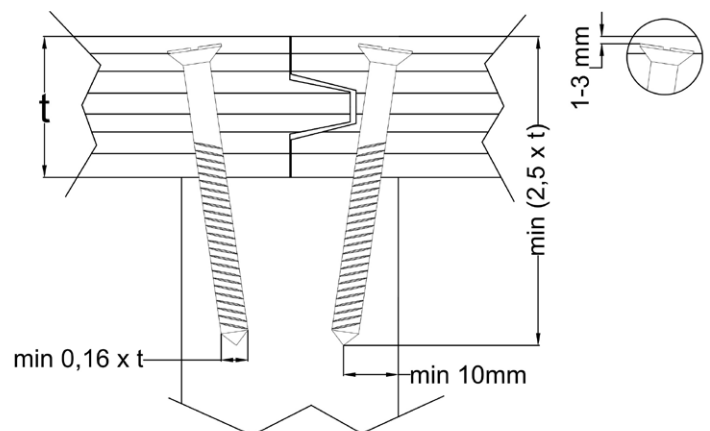


Fig. 3:  
Installation of Paged TG2, TG4 plywood  
on floor joists.

| Fastener Type  | Klasa użytkowania <sup>b</sup> |                        |                        |
|--|--------------------------------|------------------------|------------------------|
|  | 1                              | 2                      | 3                      |
| <b>Nails and screws with a diameter ≤ 4 mm</b>                                     | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>b</sup> |
| <b>Bolts, anchors, nails, and screws with a diameter &gt; 4 mm</b>                 | None                           | Fe/Zn 12ca             | Fe/Zn 25c <sup>b</sup> |
| <b>Staples</b>   | Fe/Zn 12c <sup>a</sup>         | Fe/Zn 12c <sup>a</sup> | Stainless steel        |
| <b>Fasteners made of perforated steel and steel sheets with a thickness ≤ 3 mm</b> | Fe/Zn 12c <sup>a</sup>         | Fe/Zn 12c <sup>a</sup> | Stainless steel        |
| <b>Steel sheets with a thickness of 3 to 5 mm</b>                                  | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>b</sup> |
| <b>Steel sheets with a thickness above 5 mm</b>                                    | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>b</sup> |

<sup>a</sup> If a hot-dip galvanized coating is used, Fe/Zn 12c must be replaced with Z350 in accordance with EN 10147.

<sup>b</sup> In conditions of particularly high corrosion, stronger coatings or stainless steel should be considered.

Table 4.1:

Example of minimum requirements for fasteners regarding material protection against corrosion (based on ISO 2081).



## 5.4 Expansion Gaps

- Begin the work by placing a full plywood sheet in the corner of the room, ensuring a right angle.
- For panels with tongue-and-groove edges, trim the tongue from the edge of the sheet that will be placed against the wall.
- Leave a gap between the wall and the plywood sheet of 5 mm (use spacers corresponding to the required thickness).
- Installed panels must have an expansion gap of at least 1 mm between sheets to allow for free air-flow. It is recommended that the expansion gap be 2–3 mm along the long edges of the panels and 1–2 mm along the short edges.
- Sheets with tongue-and-groove joints do not require an expansion gap. During installation, ensure that the edges fit tightly together. A mallet may be used for this purpose (do not strike the tongue or groove directly, as this may cause damage to the panel).

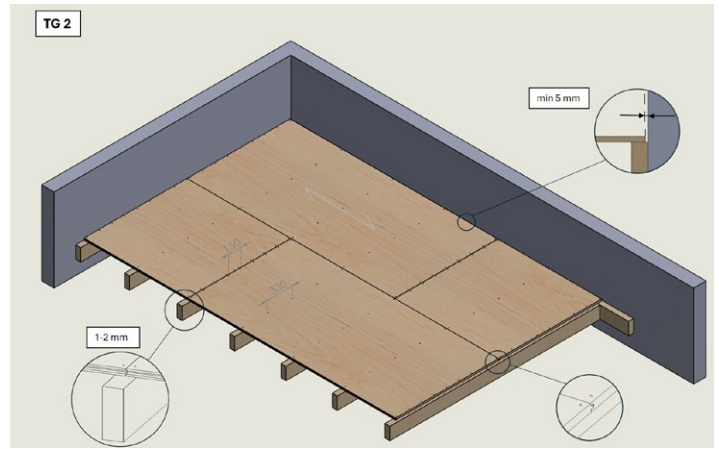


Fig. 4:  
Installation of TG2 Paged plywood on floor joists

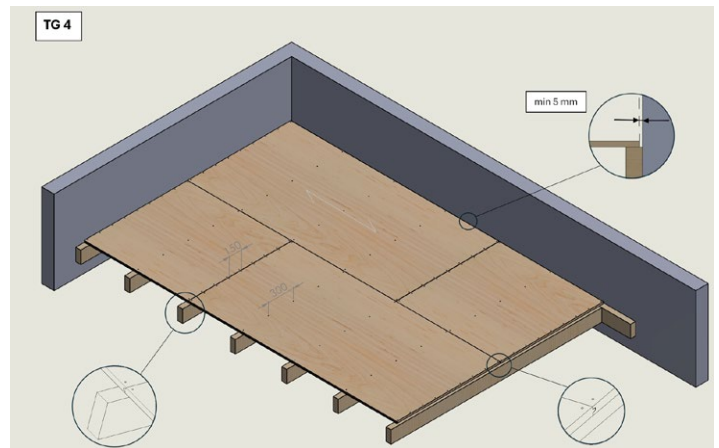


Fig. 5:  
Installation of TG4 Paged plywood on floor joists.

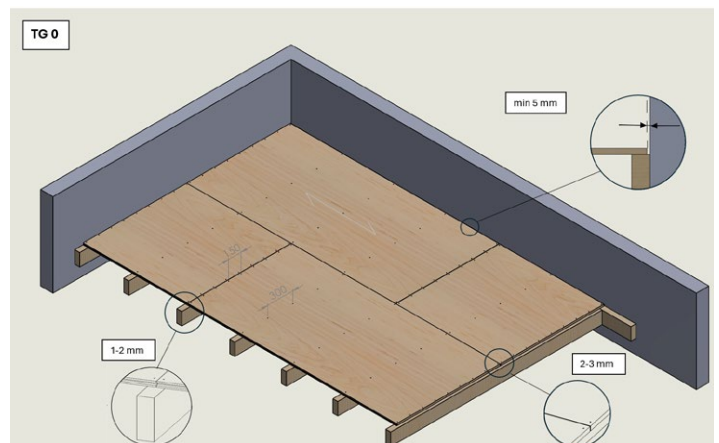


Fig. 6:  
Installation of TGO Paged plywood on floor joists.

# 6. Roof Sheathing Installation

## 6.1 Types of Plywood

**Pine plywood has been specifically designed for roof sheathing.**

Plywood panels are available in three edge finish variants:

- **TG0 – straight edges without additional machining**
- **TG2 – tongue and groove on the longer edges**
- **TG4 – tongue and groove on all four edges**

Thanks to this solution, installation becomes very simple.



### **Paged Softwood ThickPly**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 6–40 mm



### **Paged Softwood ThickPly FR B-s1,d0**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 12–40 mm



### **Paged DryGuard**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–30 mm



### **Paged DryGuard FR B-s1,d0**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 12–30 mm



### **Paged MouldGuard**

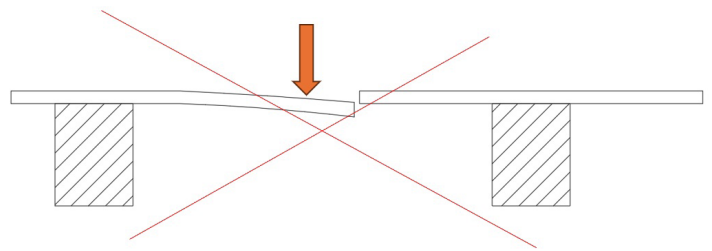
Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–30 mm

## 6.2 Roof Overhang

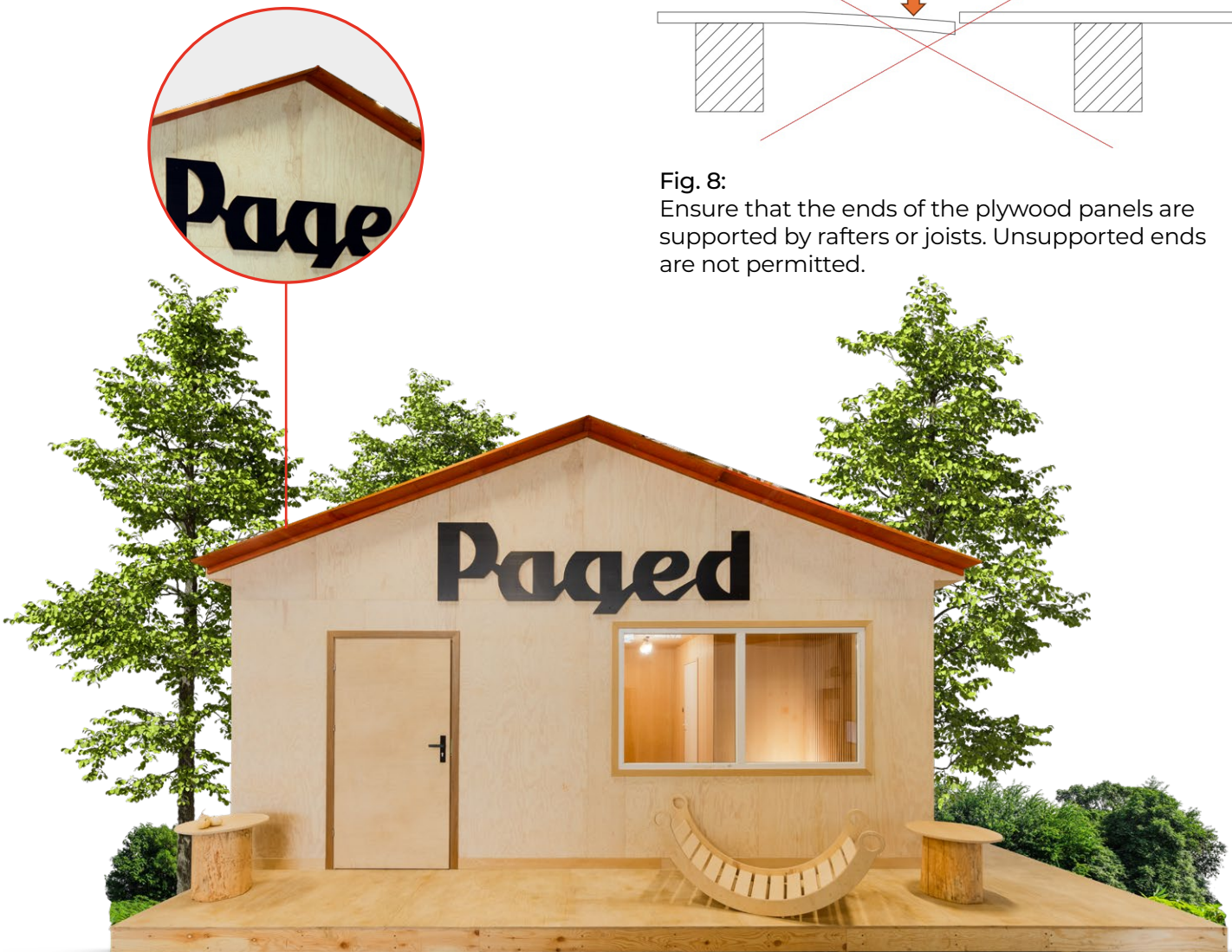
- The roof overhang is the horizontal, lower edge of the roof surface that extends beyond the external walls. In addition to its decorative function, the overhang diverts rainwater, protects the façade from moisture, and ventilates the space under the roof covering.
- Plywood panels should always be installed in alignment with the grain direction of the veneer, parallel to the spacing between the rafters. All short edges of the plywood must be supported by rafters to prevent “bouncing” of the panels.
- For sloped roofs, installation should start from the eaves and progress toward the ridge. Panels should be installed with the tongue edge facing upward to prevent water from accumulating in the grooves of the panel.



**Fig. 7:** Installation of plywood panels on a roof structure.



**Fig. 8:** Ensure that the ends of the plywood panels are supported by rafters or joists. Unsupported ends are not permitted.





## 6.3 Roof Sheathing Installation

- The roof overhang is the horizontal, lower edge of the roof surface. The recommended spacing of rafters for plywood sheathing is 400, 600, or 800 mm.
- The panels should be laid perpendicular to the rafters so that the short edges rest on the supports.
- The short edges should be staggered in relation to each other; this is known as a „staggered joint” layout (see Fig. 9).

## 6.4 Fasteners

- Plywood panels should be attached to rafters using metal fasteners—secured with hardened screws with countersunk heads or nails with ringed shanks, with a length of at least 2.5 times the thickness of the panel being installed.
- The minimum distance from the edge of the rafter to the fastener should be 10 mm.
- The spacing between fasteners should be:
  - o 150 mm along the short edges of the panels,
  - o 300 mm along the long edges of the panels.
- The minimum diameter of the fasteners should be  $0.16 \times$  the thickness ( $t$ ) of the plywood panel.
- Fasteners should be recessed to a depth of 1–3 mm below the plywood surface.
- Metal fasteners must be corrosion-resistant according to EC5, Table 4.1, depending on the usage class.

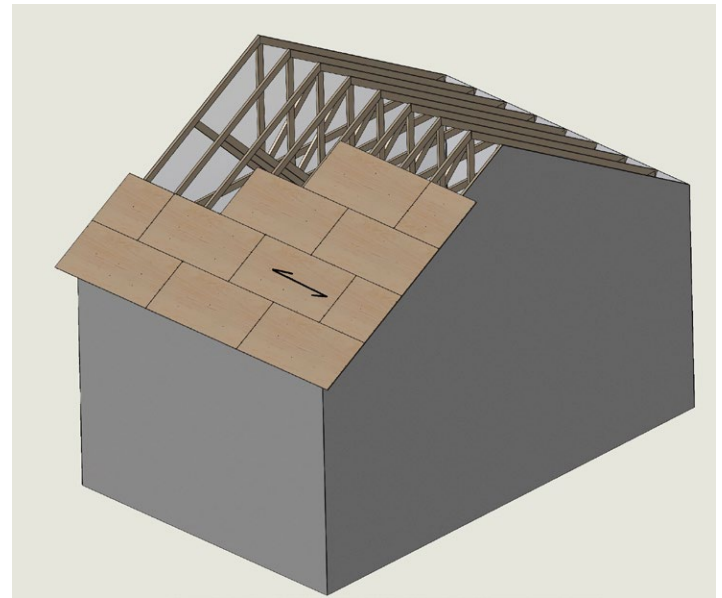


Fig. 9: Installation of plywood panels on a roof structure.

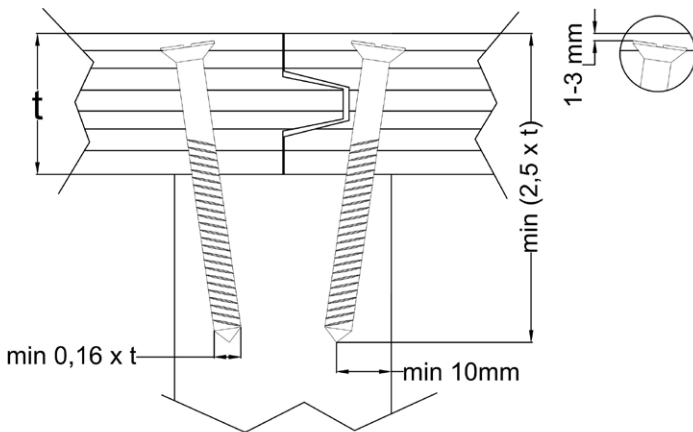


Fig. 10: Installation of TG2, TG4 Paged plywood on floor joists.

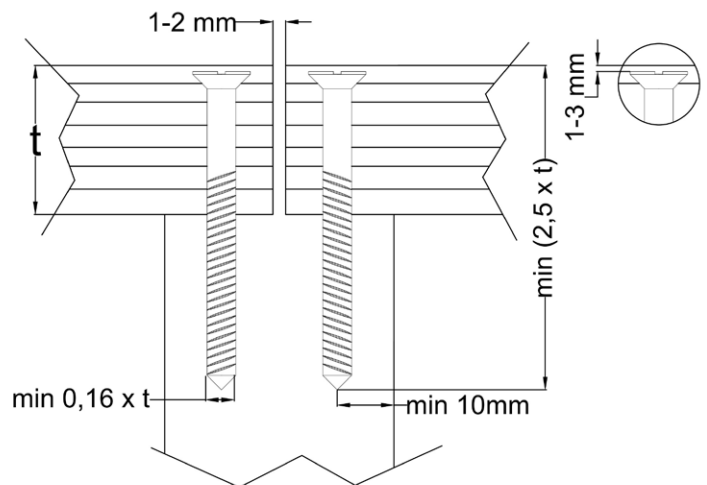


Fig. 11: Installation of TG0 Paged plywood on floor joists.



| Fastener Type  | Klasa użytkowania <sup>b</sup> |                        |                        |
|--|--------------------------------|------------------------|------------------------|
|  | 1                              | 2                      | 3                      |
| <b>Nails and screws with a diameter ≤ 4 mm</b>                                     | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |
| <b>Bolts, anchors, nails, and screws with a diameter &gt; 4 mm</b>                 | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |
| <b>Staples</b>   | Fe/Zn 12c <sup>1</sup>         | Fe/Zn 12c <sup>a</sup> | Stainless steel        |
| <b>Fasteners made of perforated steel and steel sheets with a thickness ≤ 3 mm</b> | Fe/Zn 12c <sup>1</sup>         | Fe/Zn 12c <sup>a</sup> | Stainless steel        |
| <b>Steel sheets with a thickness of 3 to 5 mm</b>                                  | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |
| <b>Steel sheets with a thickness above 5 mm</b>                                    | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |

<sup>a</sup> If a hot-dip galvanized coating is used, Fe/Zn 12c must be replaced with Z350 in accordance with EN 10147.

<sup>b</sup> In conditions of particularly high corrosion, stronger coatings or stainless steel should be considered.

Table 4.1:

Example of minimum requirements for fasteners regarding material protection against corrosion (based on ISO 2081).

## 6.5 Expansion Gaps

- Installed panels should have expansion gaps of at least 1 mm per meter of length between panels to allow for free airflow.
- It is recommended to maintain expansion gaps of 2–3 mm along the long edges of the panels and 1–2 mm along the short edges.

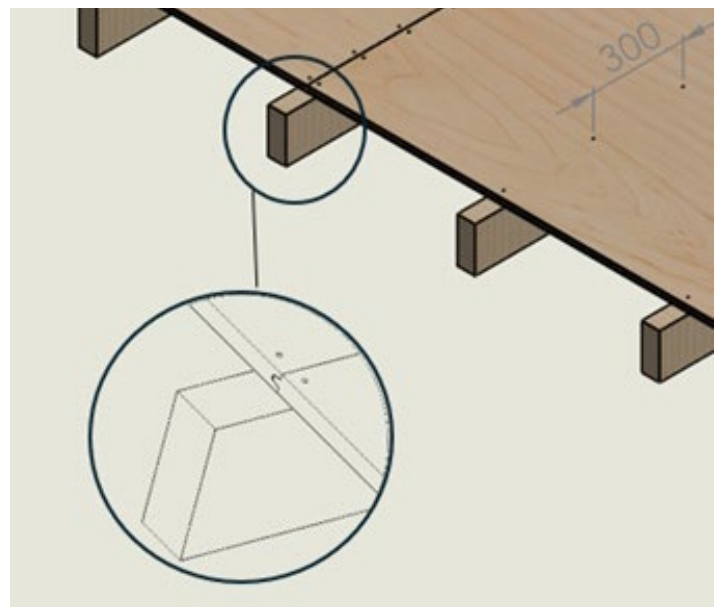


Fig. 12:  
Installation of plywood panels with the required expansion gaps.

# 7. Types of Plywood

## 7.1 Rodzaje sklejek

**Pine plywood has been specifically designed for wall sheathing.**

Plywood panels are available in three edge finish variants:

- **TG0 – straight edges without additional machining**
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### **Paged DryGuard**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–30 mm



### **Paged DryGuard FR B-s1,d0**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 12–30 mm



### **Paged MouldGuard**

Dimensions: 2500 x 1250 mm, 2440 x 1220 mm, 2400 x 600 mm; Thickness: 9–30 mm

## 7.2 Wall Sheathing Installation

- Begin by placing a full plywood sheet in the corner of the wall, ensuring a right angle.
- Remove the tongue from the edge of the panel positioned at the edge of the wall sheathing.
- It is recommended to install the panels vertically.

## 7.3 Fasteners

- Plywood panels should be attached to the vertical structure using metal fasteners—secured with hardened screws with countersunk heads or nails with ringed shanks, with a length of at least 2.5 times the thickness of the panel being installed.
- The minimum distance from the edge of the structural elements to the fastener should be 10 mm.
- The spacing between fasteners should be:
  - 150 mm along the short edges of the panels,
  - 300 mm along the long edges of the panels.
- The minimum diameter of the fasteners should be  $0.16 \times t$  of the plywood panel.
- Fasteners should be recessed to a depth of 1–3 mm below the plywood surface.
- Metal fasteners must be corrosion-resistant according to EC5, Table 4.1, depending on the usage class.



Fig. 13:  
Installation of plywood panels on a wall structure.

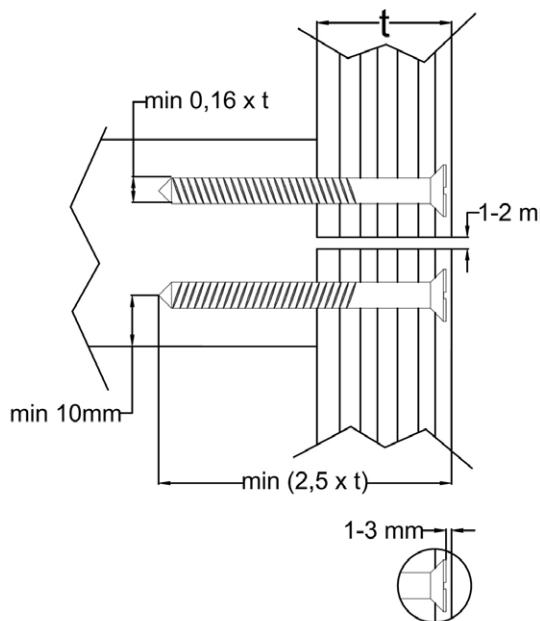


Fig. 14:  
Installation of TG2, TG4 Paged plywood on wall supports.

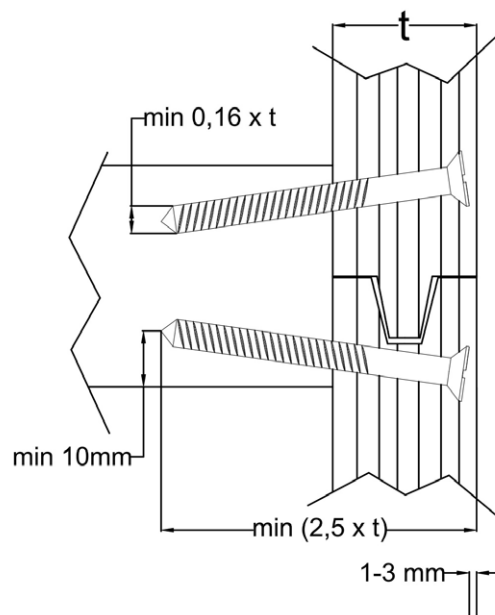


Fig. 15:  
Installation of TG0 Paged plywood on wall supports.

| Fastener Type  | Klasa użytkowania <sup>b</sup> |                        |                        |
|--|--------------------------------|------------------------|------------------------|
|  | 1                              | 2                      | 3                      |
| <b>Nails and screws with a diameter ≤ 4 mm</b>                                     | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |
| <b>Bolts, anchors, nails, and screws with a diameter &gt; 4 mm</b>                 | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |
| <b>Staples</b>   | Fe/Zn 12c <sup>1</sup>         | Fe/Zn 12c <sup>a</sup> | Stainless steel        |
| <b>Fasteners made of perforated steel and steel sheets with a thickness ≤ 3 mm</b> | Fe/Zn 12c <sup>1</sup>         | Fe/Zn 12c <sup>a</sup> | Stainless steel        |
| <b>Steel sheets with a thickness of 3 to 5 mm</b>                                  | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |
| <b>Steel sheets with a thickness above 5 mm</b>                                    | None                           | Fe/Zn 12c <sup>a</sup> | Fe/Zn 25c <sup>a</sup> |

<sup>a</sup> If a hot-dip galvanized coating is used, Fe/Zn 12c must be replaced with Z350 in accordance with EN 10147.

<sup>b</sup> In conditions of particularly high corrosion, stronger coatings or stainless steel should be considered.

Table 4.1:

Example of minimum requirements for fasteners regarding material protection against corrosion (based on ISO 2081).

## 7.4 Expansion Gaps

- Installed panels should have expansion gaps of at least 1 mm per meter of length between panels to allow for free airflow.
- It is recommended to maintain expansion gaps of 2–3 mm along the long edges of the panels and 1–2 mm along the short edges.

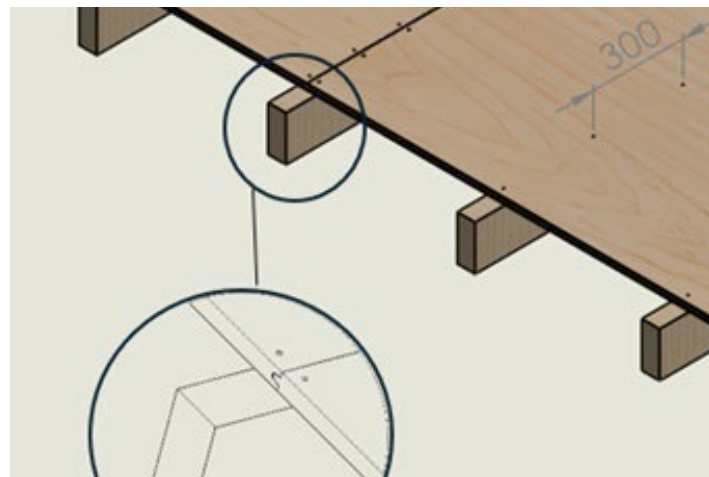


Fig. 16:

Installation of plywood panels with the required expansion gaps.

**Paged**

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