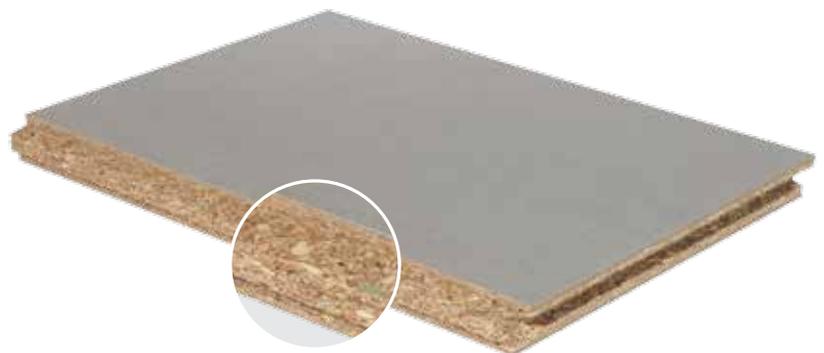




# Mezzanine

Technical manual





STANDARD FEATURE

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-  **Chipboard**
-  **Product class P6**
-  **Structural applications**
-  **Tongue and groove (T&G)**

ADDITIONAL OPTIONS

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-  **Varnished (optional)**
-  **Melaminated (optional)**

## Introduction

Mezzanine floors are often installed in spaces with high ceilings to increase the floor surface area. Having a self-supporting floor framing means you can add one or more floors. These floors can serve as storage spaces, office spaces, control rooms or walkways.

With the Mezzanine product range, UNILIN is offering a broad, cost-efficient choice of mezzanine boards. Due to their high load-bearing capacity, Mezzanine products are also suited for traditional applications in offices, retail spaces or prefabricated unit construction.

## Mezzanine: high quality floors

UNILIN developed especially for Mezzanine a 38 mm thick high density U7 chipboard (690 kg/m<sup>2</sup>, with a tolerance of +/-7%) to serve as a base board. This board consists of a highly compacted core and strongly bonded coatings.

Mezzanine U7 is a P6 board with improved strength properties. This **CE certified, P6 class EN 312 board** by far exceeds the technical strength and stiffness requirements set by the P6 standard, making it the basis for a robust and reliable floor. As a result, Mezzanine U7 boards are able to bridge greater distances between support beams than conventional P6 boards. **The savings achieved in terms of materials make fitting mezzanine floors more cost efficient.**

The base boards for Mezzanine are internally produced by UNILIN and, if necessary, are given a finishing coat. The ISO 9001 quality assurance system is your guarantee of a continuous quality and durable finished product.

Mezzanine U7 is available as standard in a 38 mm thickness. Other thicknesses and types (e.g. P5) are also available on request. For more information on the technical possibilities, please contact us via [info.panels@unilin.com](mailto:info.panels@unilin.com).



## Types

UNILIN offers a wide range of mezzanine floors:



### Mezzanine Standard

Standard mezzanine floor board, with highly compacted and unfinished chipboard in the top layer. A further finish can be given to the top layer in the form of a thin floor covering (PVC, vinyl, carpet or metal plate).



### Mezzanine Standard White

Standard mezzanine floor board, finished with a UV-cured, white lacquer on the underside. Suitable for higher light values and a professional finish in the space under the floor.



### Mezzanine Deluxe

Mezzanine floor board with wear-resistant melamine finish. During the pressing process, these panels achieve a specific structure that ensures **a slip-resistance rating of R10**. The reverse is finished with a white melamine layer, suitable for higher light values and a professional finish in the space under the floor.



### Mezzanine Antislip

Mezzanine floor board with a distinct grey textured surface. An **enhanced slip-resistance rating (R12)** is achieved because of the deep texture, making Mezzanine Antislip suitable for high traffic areas. The reverse is finished with a white melamine layer, suitable for higher light values and a professional finish in the space under the floor.

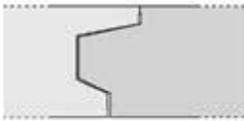


## Tongue and groove profile

The Mezzanine boards are available in TG4 or TG2 long edges. As a standard, we supply boards with an F-profile, but other T&G profiles are also available on request.

### Standard

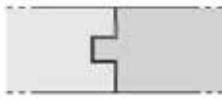
F-profile - 38 mm:



Assembly of the floor with the F-profile is fast and professional, achieving maximum strength for both distributed and concentrated load.

### Other possible profiles

T-profile - 38 mm:



The T-profile is a reversible profile.

G-profile - 38 mm:



G-profiles feature a groove in which a loose tongue can be placed. UNILIN can supply matching 3,6 mm HDF tongues with the boards.

TG2 boards can be supplied on request. Once the mezzanine boards are installed, a small expansion joint is visible on the underside of the mezzanine panels.

## Technical properties

The load-bearing capacity of a floor is determined by the strength and rigidity of the support structure, together with the performance of the boards and their connection profile. A load-bearing floor must meet the requirements for both strength and deflection. On the one hand, the floor must be sufficiently strong to withstand all the forces applied to it and, on the other, it should not sag excessively under its own load and variable load.

### Technical properties of Mezzanine U7 (38mm)

The table below shows that the Mezzanine U7 has a better modulus of elasticity, flexural strength and tensile strength than standard P6 boards.

5/95 percentile values	Unit	Reference	Mezzanine U7 (38 mm)	Standard P6 according to EN312
Bend strength	N/mm <sup>2</sup>	EN 312-chart 9	15	14
Modulus of elasticity	N/mm <sup>2</sup>	EN 312-chart 9	2600	2200
Tensile strength	N/mm <sup>2</sup>	EN 312-chart 9	0,35	0,3
Thickness swelling, 24h	%	EN 312-chart 9	14	14

Typical calculation/design values	Unit	Reference	Mezzanine U7 (38 mm)
Strength - traction $f_t$	N/mm <sup>2</sup>	EN 12369-1	7,8
Strength - pressure $f_c$	N/mm <sup>2</sup>	EN 12369-1	11,9
Strength - bending $f_m$	N/mm <sup>2</sup>	EN 12369-1	11,7
Strength - panel shear strength $f_v$	N/mm <sup>2</sup>	EN 12369-1	6
Strength - roller shear strength $f_r$	N/mm <sup>2</sup>	EN 12369-1	1,7
Stiffness - traction $E_t$	N/mm <sup>2</sup>	EN 12369-1	1800
Stiffness - pressure $E_c$	N/mm <sup>2</sup>	EN 12369-1	1800
Stiffness - bending $E_m$	N/mm <sup>2</sup>	EN 12369-1	3100
Stiffness - shear displacementmode $G_v$	N/mm <sup>2</sup>	EN 12369-1	900

## Concentrated load

The Mezzanine U7 floors have been tested by TCHN Brussels to the EN 1195 standard, which stipulates the authorised concentrated load and soft body impact. A 50mm by 50mm stamp is used to apply the concentrated loads.

Span (mm)	500	600	700	800	900
Long duration; $\Psi_2 = 0.3$	5.5	5.2	4.8	4.5	4.0
Long duration; $\Psi_2 = 0.6$	5.5	5.2	4.8	4.0	3.0
Medium duration; $\Psi_2 = 0.3$	7.7	7.2	6.7	5.2	4.0
Medium duration; $\Psi_2 = 0.6$	7.2	6.7	6.2	4.4	3.0

- convert kN into kg: 1 kN corresponds to 100 kg
- $\Psi_2$ : Eurocode correction factor for variable load
- Accumulated duration of characteristic load amounts to 6 months to 10 years for a long duration, 1 week to 6 months for a medium duration

## Soft body impact

Mezzanine U7 (38 mm) meets the requirements of the EN 12871 standard for a floor with impact class 1.

## Uniformly Distributed Load (UDL)

The load tables for uniformly distributed load are based on:

- criteria EN 12871, i.e. deflection of min.  $\{\text{span}/100; 6\}$  mm, in which a deflection of the beam distance/100 is allowed, with a maximum of 6 mm;
- deflection criteria of min.  $\{\text{span}/200; 3\}$  mm, in which a deflection of the beam distance/200 is allowed, with a maximum of 3 mm.

### Authorised uniformly distributed load $q_k$ (kN/m<sup>2</sup>) Mezzanine U7, 38mm (3 support beams)

Span (mm)	400	500	525	600	700	800	900
Not glued; long duration ; min. $\{\text{span}/100; 6\}$	90.0	45.0	40.5	26.0	16.0	11.0	7.5
Not glued; long duration ; min. $\{\text{span}/200; 3\}$	80.0	40.0	36.5	24.0	12.5	7.0	4.5

- convert kN into kg: 1kN corresponds to 100kg.

The specified technical characteristics and permissible load values of Mezzanine boards are based on a sound design for the support structure and its components, proper placement of the boards and suitable environmental conditions.

## Technical support

You can rely on UNILIN for all the additional technical support.

You can also contact us for information about concentrated loads and spans for different thicknesses and types. Please contact us at [info.panels@unilin.com](mailto:info.panels@unilin.com) if you have any questions.



## Reaction to fire

Mezzanine U7 boards were tested for their reaction to fire according to the EN ISO 9239 (Flooring Radiant Panel test). This test simulates the conditions experienced by flooring in a room or escape route during the early stages of a developing fire in an adjacent room. The upper side of the floor boards is hereby subjected to thermal radiation and a flame front.

The classification for reaction to fire and smoke production is carried out according to EN 13501-1 and is an important indicator for the potential evacuation in case of a fire.

Mezzanine U7 boards are CE certified and are in the following fire reaction classes:

- Mezzanine U7 Standard/Standard White (38 mm):  $C_{fl-s1}$
- Mezzanine U7 Deluxe (38 mm):  $C_{fl-s1}$
- Mezzanine U7 Antislip (38 mm):  $B_{fl-s1}$

## Installing of floors

### Storage and processing

Mezzanine floor boards should be stacked horizontally in packaging and in a dry environment. Use spacers or pallets to avoid direct ground contact. If there is a risk of a damp ground surface, a waterproof foil should be placed before the packs are stacked up.

The storage place should be dry and well ventilated. An average relative humidity of 50 % ensures a moisture content of between 7 and 9 % in the panel.

The boards should be delivered at the building site at least one week or more before processing to allow the wood panels to adapt to the surrounding atmosphere. Make sure that the site conditions are not critical in terms of exposure to moisture, rain or sun. Like all wood products, Mezzanine will also react to changes in humidity, resulting in possible dimensional changes and internal stresses in the panels. The best way to limit dimensional variations is to stock and install the floor panels at a moisture content level that is as close as possible to the expected final moisture content.

### Support structures

Mezzanine boards can be mounted on a metal or wooden support structure.

This support structure must be assembled in such a way that the upper surfaces are flush. Wooden joists must be dry and have a moisture content below 18%. If the wooden joists are too wet during assembly of the floor, this may cause the floor to warp or crack over time.

If the open space under the floor is at risk of reaching higher humidity levels, this space must be adequately ventilated. Poor ventilation will result in a build-up of moisture in the panel, which can lead to reduced structural strength and to the formation of mould. A vapour barrier between the support structure and the mezzanine floor is therefore recommended. The choice of girder plate must be adapted to the current service class.

### Fitting pattern

The boards should be placed in a staggered direction and transverse to the joist. The centre-to-centre distance of the joists should always be a portion of the panel length. This makes it possible to place the panels in such a way that all the short sides are supported. Maximum load bearing capacity is achieved for the floor system as a result. Mezzanine boards can, however, also be positioned on short sides without the support, unless the short side consists of a straight board. Also, in such a situation, the strong F-profile will allow a high load-bearing capacity for both distributed and concentrated loads.

Every floor panel should be supported by at least three joists. If this is not possible (e.g. in an end piece), additional support is recommended under the edges.

## Fastening

Mezzanine boards are secured to the underlying structure with screws. When positioned, panels should not be pushed against each other with great force. The choice of fasteners is determined by the type of support structure. When the floor board is supported by a metal structure, self-tapping screws or other suitable fasteners should be used in accordance with the manufacturer's guidelines. The length of the screws must be at least twice the thickness of the panel and their diameter at least 0.2 times the panel thickness.

The screws should be at least 25 mm from the edge. A distance of at least 15 mm is recommended in the case of a straight edge. In order to avoid damage, make sure that the screws do not protrude above the floor surface.

In the edge areas, the screws should be spaced 150 mm apart, unless otherwise required by structural calculations. A spacing of 300 mm is sufficient at the level of the intermediate beams.

The edge areas of the floor should be supported by an underlying structure.

It is possible to glue the tongue and groove joint together to increase the strength of the floor and avoid possible squeaking. Always use an adhesive suitable for joining wood sections.

## Expansion joints

Wooden floor boards can expand or shrink slightly due to variations in humidity. Expansion joints should be provided in order to absorb these variations. Along the floor perimeter and next to solid walls, bearing columns and other objects, a minimum gap of 10 mm should be left. Additional expansion joints of 20 mm are required for floor measurements in excess of 10 metres. When installing additional expansion joints, the support must be ensured by inserting an additional joist for example.

## Finish and maintenance

It is possible to sand Mezzanine boards supplied with an unfinished surface to remove any slight level differences or to prepare the surface for any further finish.

During sanding ensure proper dust extraction and subsequently remove all loose dust particles.

You should examine the following points before an additional layer is applied:

- Elasticity of finishing coat: for rigid materials, an intermediate layer (e.g. PE film) is recommended;
- Load-bearing capacity of the floor framing;
- Flatness and closeness of the load-bearing floor: it might be necessary to re-sand and fill up seams;
- Avoid direct contact with water when applying the finishing coat: A technical solution must be provided to prevent water ingress.

Clean the mezzanine floors with a damp cloth or mop. Stubborn stains can be removed with suitable cleaning products.

## Certificates

Mezzanine floors are supplied with the following certificates:

- ISO 9001
- CE
- Fire certificate with EXAP report

UNILIN, division panels is actively engaged in sustainable forest management. Mezzanine is therefore also available with PEFC and FSC® labels on request.

## Dimensions and stock inventory

Mezzanine floors are directly available in the following dimensions:

### Mezzanine U7

Dimensions (mm)				
2400 x 600				
	Standard	Standard White	Deluxe	Antislip
Thickness (mm)	Raw	Raw	Wear resistant	Antislip
	-	-	-	-
38 mm	Raw	White acrylic lacquer	White melamine	White melamine
	25	25	25	25



## UNILIN, division panels

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UNILIN, division panels is part of the UNILIN group. Ever since our inception in 1960 we have grown into an international player, providing solutions to the construction industry, the furniture sector and interior design.

UNILIN is synonymous with (r)evolution. Our divisions, through ongoing investments in design, technology, research and development, have become leaders in their respective segment. Drawing from a strong vertical integration, from tree to finished product, driven by creativity and with innovation as our incentive, we develop solutions tailored to your needs.