



Construction manual

Structural particle board (P5)
for use in timber frame construction



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Structural construction panels

Characteristics	Unit	Value			
		Durelis	Durelis VapourBlock	BioSpan	BioSpan VapourBlock
Density EN 323	kg/m ³	8-10 mm: 740 10-15 mm: 720			
Moisture content EN 322	%	6-10			
Air permeability at 50Pa EN 13829	m ³ /m ² /h/Pa	0.0025	<0.001	0.0025	<0.001
Thermal conductivity EN 13986	W/mK	0.13			
Sound absorption coefficient EN 13986	-	250-500 Hz: 0.10 1000-2000 Hz: 0.25			
Airborne sound insulation EN 13986	dB	27.4 (18mm)			
Vapour resistivity μ EN 13986	-	50	240 (13mm)	50	240 (13mm)
Fire rating EN 13501-1	-	D-s2,d0			
Formaldehyde content EN 120	mg/100g	< 8 = E1		< 2 = "E0"	

Table 1: Physical construction characteristics of P5 particle board

Mechanical properties (EN 12369-1)

Characteristics	Unit	Characteristic strength values			
		6-10 mm	>10-18 mm	>18-25 mm	>25 mm
Bending strength f_m	N/mm ²	15	13.3	11.7	10
Tensile strength f_t	N/mm ²	9.4	8.5	7.4	6.6
Compression strength f_c	N/mm ²	12.7	11.8	10.3	9.8
Shear strength f_v	N/mm ²	7.0	6.5	5.9	5.2
Rolling resistance f_r	N/mm ²	1.9	1.7	1.5	1.3
Average stiffness values					
Modulus of elasticity E_m	N/mm ²	3500	3300	3000	2600
Shear stiffness G_v	N/mm ²	960	930	860	750

Table 2: Characteristic values of P5 particle board

For application in service class 1, the above values apply. They should be adjusted as per ENV-1995-1-1 depending on the duration (K_{mod} , K_{def}).

For application in service class 2, the values of the above table should be adjusted in line with the service class and the duration (K_{mod} , K_{def}).

The percentile characteristic values of the mean stiffness values can be calculated as 0.8 times the mean value.

Transport and storage

The production process for the particle board and construction panels, during which the particles are evenly distributed over the entire thickness of the panel, ensures a balanced structure and the long-lasting flatness of the panels. Correct transport and storage are essential during the various implementation stages in order to maintain this flatness.

In case of mishandling or poor stacking, particle board and construction panels may suffer permanent deformations, e.g. when they are not stored on top of flat pallets or a sufficient number of support blocks.

The following method is recommended:

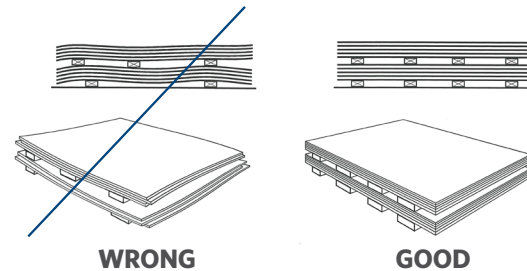
The particle board and construction panels should be stacked horizontally in bundles on pallets or dry wooden battens (70 X 70 mm or 90 X 90 mm). In the likelihood that the surface may become wet, it is necessary to cover it with a waterproof film (e.g. a polyethylene sheet) before stacking the panels.

If wooden battens are used, these should be of the same thickness and spaced no further than 800 mm apart. For particle board and construction panels less than 15 mm thick, more wooden battens should be used, for example based on a spacing of 50 x the thickness of the panel (see table below). At the edges, the panels should not project from the last wooden battens by more than 150 mm.

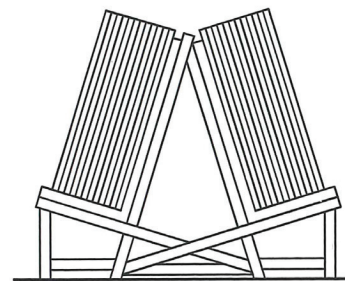
Panel thickness (mm)	Distance between battens (m)	Panel length (mm)	Min. No. of battens per pallet
6	0.3	2500	8
8	0.4	2500	6
10	0.5	2500	5
12	0.6	2500	4

Table 3: Minimum number of wooden battens based on panel thickness

- The wooden battens are placed one above the other, so as to prevent sagging of the particle board and construction panels.
- The edges of the stacked panels must be properly aligned to avoid damage caused by impact on the protruding edges or angles and to prevent discoloration by sunlight.



- Vertical stacking of a small quantity of panels is acceptable, provided that the panels are well supported.



- The place of storage must be dry and well ventilated. An average relative humidity of 50% leads to a moisture content of 7-9% in the panels.
- In the likelihood of particularly dry or wet conditions during transport, temporary storage or on site, the panels should be wrapped in a plastic sheet. Make sure that no condensation occurs under the sheet. It must allow adequate ventilation around the panels.
- To limit the negative consequences of a changing environment, one or two cover plates should be placed on the stacks during the works or in the case of long-term storage.

Moisture content and conditioning

After production, a particle board or construction panel has a moisture content of 8% ($\pm 3\%$). Upon delivery to the end user, the moisture content may however have changed as a result of environmental factors during transport and storage. In particular, storing the panels in a wet environment on site inevitably leads to water absorption (albeit limited), and conversely, the moisture content of the panel will drop in a very dry environment.

Service class	Normal range of relative humidity at 20°C	Average equilibrium moisture in the panel	Type of particle board	Application
Service class 1 (dry environment)	30-65%	4-11%	P4	load bearing applications in dry environment
Service class 2 (humid environment)	65-85%	11-17%	P5/P7	load bearing applications in humid environment
Service class 3 (dry environment)	> 85%	> 17%	/	possibility of direct contact with water

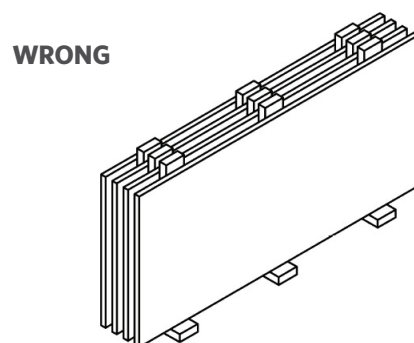
Table 4: Equilibrium moisture content of particle board and conditions of use

These variations in the moisture content first occur at the edges of the panels and on the panels at each end of a stack, but may affect all panels at a later stage.

Panel type	Expansion for a 1% variation in the equilibrium moisture content of the panel	
	Length and width	Thickness
P4	0.05%	0.7%
P5/P7	0.03%	0.5%

Table 5: Dimensional changes in P5 particle board in the case of a 1% variation in the moisture content of the panel

Dimensional changes may be limited somewhat by treating and bringing the particle board and construction panels to a moisture content as close as possible to the intended equilibrium moisture content. To this end, the panels should be placed apart from each other with sufficient spacers.



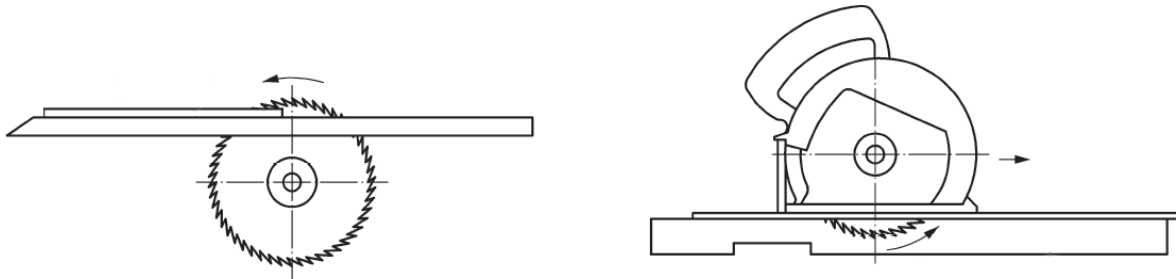
The time required for conditioning the panels depends on the type of panel and the relative humidity of the final use. A minimum period of one week is recommended but a longer period may be necessary.

Processing

Particle board and construction panels can be worked with the conventional tools used for drilling, milling and sawing. HSS or diamond saws are preferred because of their longer service life. It is advisable to use a 40-60 tooth blade with alternate top bevel to saw particle board or construction panels.

The height of the blade is approximately twice the thickness of the panel. This in order to prevent jagging of the panel when it passes the back side of the blade.

The throughput speed should be high enough to avoid leaving saw blade burn marks on the panel edges but not too high either to make sure the teeth have time to evacuate the sawn matter. Excessively fast throughput of the panel results in a frayed sawing line and will overload the motor of the saw.



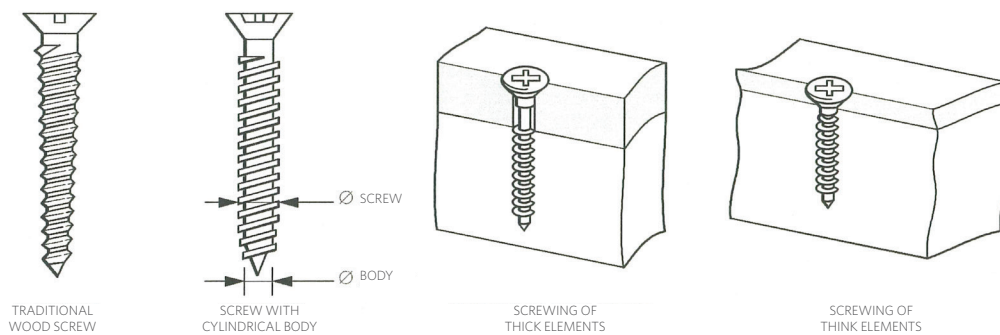
Fasteners

Grooved or ring shank flat head nails, staples with adhesive resin and screws (only for floors and roofs) can be used to secure the particle board or construction panels onto a load-bearing wooden structure. In service class 2, galvanized steel or stainless steel fasteners must be used.

The minimum length of the fasteners must be at least 50 mm or twice the thickness of the panel, whichever is the longest. For nails, the minimum diameter is 0.16 times the thickness of the panel; and 0.2 times the thickness of the panel for screws.

Panel thickness (mm)	15/16	18/22	25
Nails (profiled)	2.6x50	3.5x50	4x70
Screws	3.5x50	4.5x50	5x70

Table 6: Fasteners for particle board



Floors

Bearing structures

Timber floor elements can be placed on wooden or metal beams as well as a continuous structure such as a concrete slab.

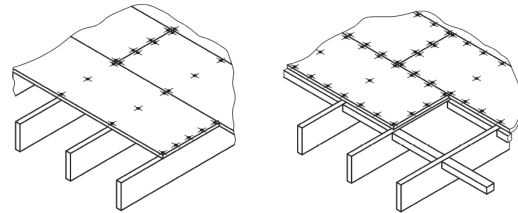
Before laying the wooden floors, the underlying structure should meet the following conditions:

- The moisture content of the wood beams cannot exceed 18 %.
- Where there is a screed or concrete structure, the moisture content should be less than 2.5 %.
- The bearing structure must be flat in order to avoid height differences and stresses in the timber flooring.
- In the likelihood of moisture build-up, the open space below the flooring should be ventilated and a vapour barrier should be placed between the bearing structure and the timber floor.



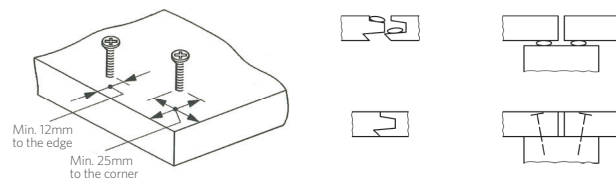
Installation on beams

- The panels should always be perpendicular to the direction of the beams.
- The axis-to-axis distance between the beams should always be a submultiple of the length of the panel. That makes it possible to position the panels so that all the short sides are supported by a beam.
- Straight-edged panels must be supported on all sides. This support should be 18 mm at least.
- Short elements should always be supported by at least 3 beams.



Fasteners

The panels are nailed or screwed. In service class 2, galvanized steel or stainless steel fasteners must be used. The distance to the edge must be at least 12 mm. The spacing between fasteners is 150 mm at the ends of the panel and 300 mm on the intermediate supports. To prevent the floor from cracking, the tongue and groove joints should be glued with PVAC adhesive (i.e. D3 OR D4 type white wood glue) or PU glue. Gluing the panels on the support beams contributes significantly to improving the overall resistance to vibrations of the whole flooring.



Expansion joints

Wooden panels may expand or shrink as a result of variations in the air humidity. Expansion joints should be planned to compensate for these variations.

Straight-edged panels are laid with an expansion joint of 4 mm for a panel width > 1 m. In the case of panels with a tongue and groove finish, a 1 mm expansion gap is already provided between tongue and groove. A further expansion joint of 2 mm should be provided when installing panels with a width greater than 60 cm. Along the walls and around all floor crossings, leave an expansion joint of at least 10 mm (or 2 mm per linear metre for spaces wider than 5 m).

Larger floors, from a length of 7 m, may require intermediate expansion joints.

Finish

Load-bearing timber floors can receive an additional finish, involving the installation of a decorative or technical covering on the wooden floor. For instance, such a covering can be a floating parquet floor, linoleum or PVC, ceramic tiles, etc.

Before laying the additional floor covering, the following aspects should be analysed:

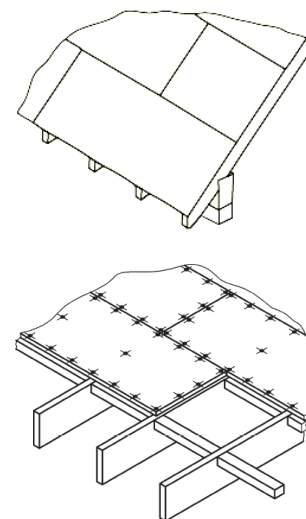
- The moisture content of the load-bearing timber floor: during construction, can prevent the additional absorption of moisture
- The elasticity of the covering: if the materials used are rigid, an underlay should be fitted (e.g. a polyethylene film)
- A load-bearing capacity that is sufficient for the type of covering
- Flatness and porosity of the load-bearing floor: sand and smooth if necessary
- Avoid using a significant amount of water when putting down the floor covering: plan a technical solution to prevent water ingress into the load-bearing floor.

Load-bearing timber floors should not absorb large amounts of moisture during the construction stage or the installation of a possible covering. Similarly, when using wooden floors, all kinds of water ingress into the floor should be avoided.

Roofs

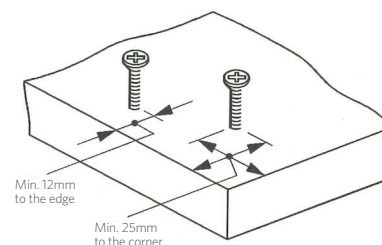
Fitting

- The panels should always be perpendicular to the direction of the beams.
- The axis-to-axis distance between the beams should always be a submultiple of the length of the panel. That makes it possible to position the panels so that all the short sides are supported by a beam.
- Straight-edged panels must be supported on all sides.
- Short elements should always be supported by at least 3 beams.



Fasteners

The panels are stapled, nailed or screwed. In climate class 2, galvanized steel or stainless steel fasteners must be used. The distance to the edge must be at least 12 mm.



Types of fasteners:

Panel thickness (mm)	12	15-22	25
Staples (with adhesive resin)	1.5x50	2.1x50	2.16x75
Nails (profiled)	2.6x50	3.5x50	4x70
Screws	3.5x50	4.5x50	5x70

Table 7: Fasteners for P5 particle board for roof constructions

Distance between fasteners:

Roof pitch	40°-45°	30°-35°	flat roof
Ends of panel	100	100	150
Intermediate beams	150	200	300

Table 8: Summary of points of support for roof constructions

Expansion joints

Wooden panels may expand or shrink as a result of variations in the air humidity. Expansion joints should be planned to compensate for these variations.

Straight-edged panels are laid with an expansion joint of 4 mm for a panel width > 1 m. In the case of panels with a tongue and groove finish, a 1 mm expansion gap is already provided between tongue and groove. A further expansion joint of 2 mm should be provided when installing panels with a width greater than 60 cm.

Where the boards are placed against other construction elements, an expansion gap of at least 2 mm per running metre must be allowed along the roof edges, plus 1 mm for each metre over 12 m length.



Pitched roofs

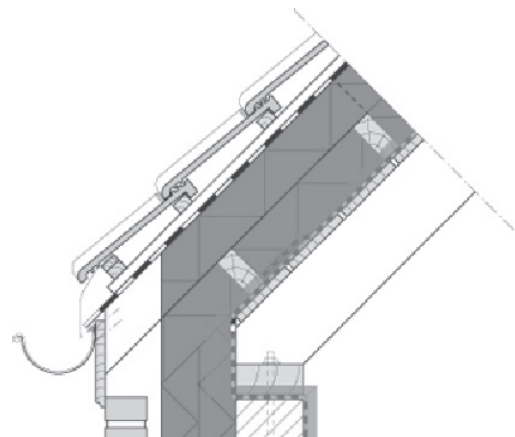
Ventilation prevents condensation below the structural roof panels.

If the attic floor is insulated, there should be enough ventilation penetrating the attic from the cornices. If there is insulation on or between the load-bearing rafters, a suitable ventilation space should be envisaged between the insulation and the structural roof panel. Provide a vapour barrier on the warm side of the insulation.

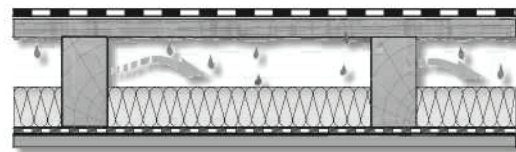
Flat roofs

Cold roof

The cold roof is derived from the pitched roof and implies that there is a ventilation space between the waterproofing layer and the insulation. This is the case of a pitched roof where there may be a gap between the roof tiles and the roof boarding, but in the case of a flat roof, this is more difficult to achieve. This is done in some countries, but in Belgium the compact roof or the warm roof is preferred.



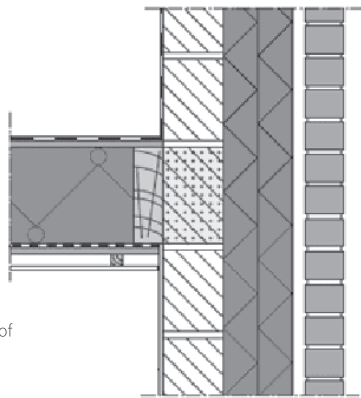
"Cold" pitched roof



"Cold" flat roof

Compact roof

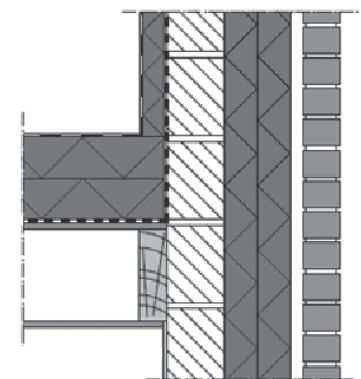
The construction of a compact roof is only possible if the work is done inside the home using a moisture control vapour barrier and if the roof is completely free of shadows cast by trees, solar panels, terraces, vegetation or other load. In order to prevent any condensation on the inside, in the summer the roof must be able to dry inwards. To do that, the roof must be warm enough. If the roof is too shady, it cannot become warm enough and will not dry inwards, which will cause moisture to build up. If the above conditions cannot be guaranteed, choose to build a warm roof.



Compact roof

Warm roof

In a warm roof, the insulation is placed above the vapour barrier layer. The insulation is completely packed between 2 vapour barrier layers; this way, the lower part of the building remains sufficiently warm and the steam cannot condense.



Warm roof

Walls

Use

The particle board and construction panels can be used as rigid cladding on the inside of vertical walls or on both sides of inner partition walls.

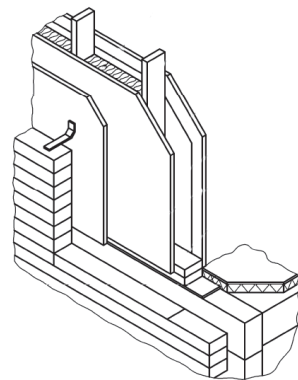
The P4 particle board and construction panel is used in dry and heated areas (living room, bedroom, etc.).

The P5 particle board and construction panel is used in damp or dry spaces (kitchen, bathroom, etc.) or in unheated spaces (garage, cellar and attics).

Cladding of façade element

The P5 particle board and construction panel can be used on the outside of a façade element, provided that the panel is protected by a rainscreen on the outer side and there is ample vapour barrier coverage on the inside of the wall.

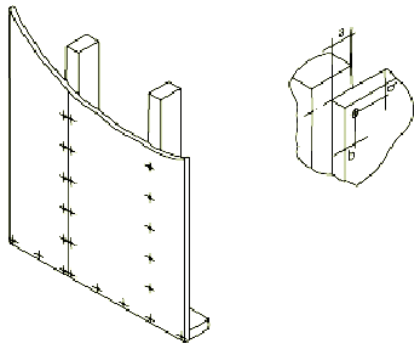
A better solution is to place the structural cladding on the inside of the façade and as vapour-permeable a material as possible on the outer surface. Ideally, this is done with a vapour-permeable wood fibre board which also contributes to the thermal insulation and soundproofing of the wall. On the outside, there must be a ventilated space between the façade finish and the wooden boards.



Fastening

In the case of partition walls and inside wall coverings, the panels should be placed vertically on the studs. There should be a stud to the right of each joint. The support surface on the studs should be at least 18 mm wide.

Straight-edged panels must be supported on all sides.



Fasteners

The panels are stapled or nailed. In service class 2, galvanized steel or stainless steel fasteners must be used. The distance to the edge must be at least 7 mm. The spacing of the fasteners on the periphery of the panel is constant and is 150 mm at most. On the intermediate studs, the spacing is double that on the periphery or 300 mm maximum. The minimum strength of the fasteners is 600/mm².

Types of fasteners:

Panel thickness (mm)	12	15-22
Staples (with adhesive resin)	1.8x45	1.8x55
Nails (profiled)	2x50	3.5x55
Screws	3x50	4x55

Table 9: Fasteners for P5 particle board panels for wall construction

Distance between fasteners:

Panel thickness (mm)	12	15-22
Ends of panel	125	150
Intermediate beams	250	300

Table 10: Summary of attachment points for wall constructions

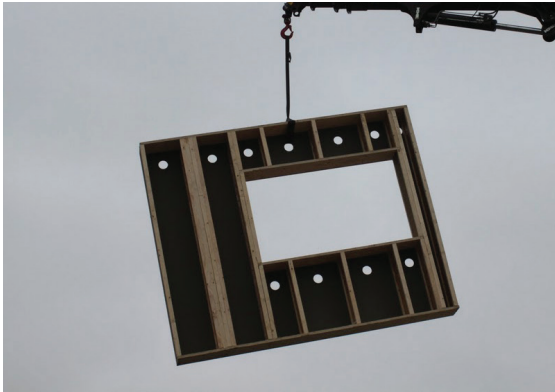
Expansion joints

Wooden panels may expand or shrink as a result of variations in the air humidity. Expansion joints should be planned to compensate for these variations.
Straight-edged panels are laid with an expansion joint of 4 mm for a panel width > 1 m. In the case of panels with a tongue and groove finish, a 1 mm expansion gap is already provided between tongue and groove. A further expansion joint of 2 mm should be provided when installing panels with a width greater than 60 cm. In places where panels abut other construction elements, an expansion joint of at least 2 mm/linear metre plus 1 mm for every metre beyond 12 m should be left along the edges of the roof.

The joints between panels must be sealed against air and vapour by means of adhesive tape.

Studs

The studs correspond to strength class C18 at least. The studs have a minimum width of 38 mm and are spaced from each other by up to 600 mm. The studs where two panels meet should be 45 mm wide at least. The studs should be dried to a moisture content corresponding to their final use.



Permissible load

The load-bearing walls which are subject to horizontal and vertical stresses must be designed according to Eurocode 5: Method A for load-bearing walls in service class 2.

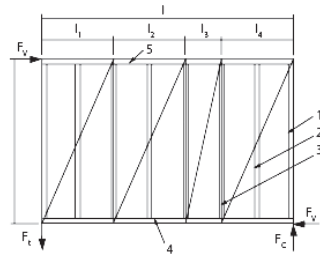


Table 11 contains the values of the shear resistance $F_{0,v,Rd}$ [kN] based on the length of a wall panel made up of a particle board and construction panel secured onto a timber framework with nails.

The total resistance of a wall and the sum of individual resistances of the various wall panels. The resistance of the wall panel is defined by multiplying the value $F_{0,v,Rd}$ of the table by the width b of the panel:

$$F_{i,v,Rd} = F_{0,v,Rd} \cdot b$$

where

- $F_{0,v,Rd}$ is the shear resistance based on the length of a wall panel taken from Table 9
- b the width of the wall panel (m)

The values of the table are valid for the panels for which $b \leq h/2$

- b the width of the wall panel
- h the height of the wall panel

For the wall panels for which $b < h/2$, the values of Table 9 should in addition be multiplied by a coefficient $c_i = 2 \cdot b/h$. Calculations for the narrow panels are thus carried out as follows:

$$F_{i,v,Rd} = F_{0,v,Rd} \cdot b \cdot c_i$$

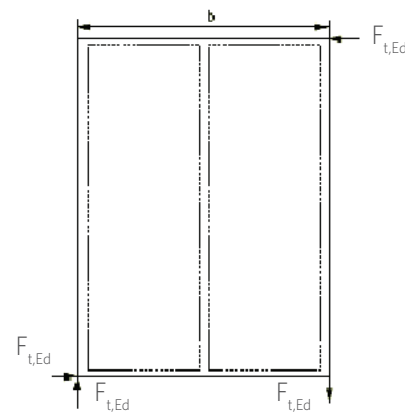
where

- $F_{0,v,Rd}$ is the shear resistance based on the length of a wall panel taken from Table 9
- b the width of the wall panel (m)
- c_i the geometric coefficient $= 2 \cdot b/h$

Prerequisites:

- The load-bearing stud walls at the end of the wall are anchored: the end studs are attached directly to the underlying structure.
- The width of each panel is at least $h/4$.
- There are no openings in the walls.

The compressive stress perpendicular to the grain of the wooden elements should be tested in the contact area between the vertical uprights and the lower and upper beams.



The external forces $F_{c,Ed}$ and $F_{t,Ed}$ can be transmitted towards the panels of the adjacent wall or the under or overlying structure.

If the tensile forces are transmitted to the underlying structure, the panel must be anchored with rigid fastening systems. The wall studs should be checked for signs of buckling (see Eurocode 5 method).

$$F_{c,Ed} = F_{t,Ed} = F_{i,v,Rd} \cdot h / b$$

Additional vertical forces (on top of the vertical forces caused by a horizontal load) may be caused by an external load applied to the vertical wall. Most of these forces can be absorbed by the vertical studs of the framework. These studs should be tested for signs of buckling. Moreover, the compressive stress perpendicular to the grain of the wooden elements should be tested in the contact area between the vertical uprights and the lower and upper beams. To do this, please refer to Eurocode 5.

Values for calculating the membrane stiffness based on the length $F_{0,v,Rd}$ [kN/m] according to the type of panel and its thickness					
Spacing between nails	Panel thickness (mm)				
	d = 12 mm Nail 1.8x50	d = 15 mm Nail 2.4x50	d = 18 mm Nail 2.7x50	d = 22 mm Nail 3.0x60	d = 25 mm Nail 3.4x60
s = 35mm	6.6	9.7	11.9	14.5	16.1
s = 50mm	4.6	6.8	8.3	10.2	11.2
s = 75mm	3.1	4.5	5.6	6.8	7.5
s = 100mm	2.3	3.4	4.2	5.1	5.6
s = 125mm	1.9	2.7	3.3	4.1	4.5
s = 150mm	1.5	2.3	2.8	3.4	3.7

Table 11: Membrane stiffness based on the length of the P5 particle board

Air tightness

The air tightness of the building envelope is crucial for the optimal performance of the installed insulation and ventilation. The slits allow the hot air to escape to the outside; the cold outside air can also penetrate inside with the risk of drafts.

In timber frame construction, the air tightness is usually achieved through the cladding which also ensures the rigidity of the construction. When choosing the type of panel, obtain correct information from the manufacturer regarding air tightness. Panels whose air permeability under a pressure difference of 50 Pa is less than $0.1 \text{ m}^3/\text{m}^2 \cdot \text{h} \cdot \text{Pa}$, are regarded as sufficiently air tight; please refer to WTCB-Contact No. 33 (1-2012).

Thanks to their TopFinish heat treatment finish, SpanoTech construction panels are guaranteed air tight ($\dot{V}^{50} < 0.002 \text{ m}^3/\text{m}^2 \cdot \text{h} \cdot \text{Pa}$). The high concentration of natural paraffin at the surface provides increased water repellency, allowing the panels to be temporarily exposed to rain.

In addition, due attention must be paid to the air sealing of any joints and openings (apertures).

Hygrothermal construction

The amount of moisture present in a timber frame building should be limited as it may be at the root of serious structural damage: mould growth, deterioration of thermal insulation performance, etc.

Whether the structural cladding is fitted inside or outside, everyone agrees that the wall structure must be vapour permeable from the inside to the outside. In other words, the inside finishing should block vapour more than the outer cladding. This makes sure that the moisture inside the dwelling which migrates into the insulation through the vapour barrier can escape outside easily. Moreover, this also allows the residual moisture of the wood and panels used for construction as well as the moisture that may have built up inside the building envelope during construction to escape.

SpanoTech construction panels with VapourBlock incorporate a pre-fitted vapour barrier with a μ value of 240 (Durelis VapourBlock). This vapour barrier is fitted in our factories and guarantees a constant μ value on the entire surface. This in contrast with traditional wood panels whose μ value is always an average. Indeed, even though they may have vapour barrier characteristics, they also present areas which are very permeable to vapour.

Load Tables for P4 panels

P4 load table in case of ACCESS (= instantaneous load) - floating installation - Service Class 1 (dry environment)								
Uniformly distributed load in kN/m ² - max. deflection l/300								
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)							
	P4 class (EN 312)							
	8	9	10	12	15	18	22	25
0.40	1.22	1.75	2.42	4.22	7.52	13.05	22.25	32.70
0.45	0.74	1.07	1.48	2.60	4.66	8.10	13.83	20.35
0.50	0.47	0.68	0.95	1.68	3.02	5.27	9.02	13.30
0.55	0.30	0.44	0.63	1.12	2.03	3.56	6.12	9.03
0.60	0.19	0.29	0.42	0.76	1.40	2.48	4.27	6.32
0.65	0.13	0.20	0.29	0.53	0.99	1.77	3.06	4.55
0.70	0.08	0.13	0.19	0.37	0.71	1.28	2.24	3.34
0.75	0.05	0.08	0.13	0.26	0.51	0.94	1.66	2.49
0.80	0.02	0.05	0.08	0.18	0.37	0.70	1.25	1.89
0.85		0.02	0.05	0.12	0.27	0.52	0.95	1.44
0.90			0.03	0.08	0.19	0.39	0.72	1.11
0.95				0.05	0.13	0.29	0.55	0.86
1.00				0.02	0.09	0.21	0.42	0.67

P4 load table in STORAGE (= long-term load - 6 months to 10 years) - floating installation - Service class 1 (dry environment)								
Uniformly distributed load in kN/m ² - max. deflection l/200								
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)							
	P4 class (EN 312)							
	8	9	10	12	15	18	22	25
0.40	0.26	0.38	0.54	0.97	1.77	3.11	5.35	7.90
0.45	0.14	0.21	0.31	0.57	1.06	1.89	3.28	4.87
0.50	0.07	0.12	0.18	0.35	0.66	1.20	2.10	3.14
0.55	0.03	0.06	0.10	0.21	0.42	0.78	1.39	2.09
0.60				0.12	0.26	0.51	0.94	1.43
0.65				0.07	0.16	0.34	0.64	0.99
0.70					0.09	0.22	0.44	0.69
0.75					0.05	0.14	0.29	0.48
0.80						0.08	0.19	0.34
0.85							0.12	0.23
0.90							0.06	0.15
0.95								0.09
1.00								0.04

Load Tables for P5 panels

P5 load table in case of ACCESS (= instantaneous load) – floating installation – Service Class 1 (dry environment)					
Uniformly distributed load in kN/m ² - max. deflection l/300					
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)				
	P5 class (EN 312)				
	16	18	19	22	25
0.40	10.42	14.87	17.51	24.74	36.36
0.45	6.47	9.24	10.88	15.39	22.64
0.50	4.21	6.02	7.10	10.05	14.80
0.55	2.84	4.07	4.81	6.82	10.05
0.60	1.97	2.84	3.36	4.77	7.05
0.65	1.40	2.03	2.40	3.42	5.07
0.70	1.02	1.48	1.75	2.51	3.73
0.75	0.74	1.09	1.30	1.87	2.79
0.80	0.55	0.82	0.98	1.41	2.12
0.85	0.41	0.61	0.74	1.07	1.63
0.90	0.30	0.46	0.56	0.83	1.26
0.95	0.22	0.35	0.43	0.64	0.98
1.00	0.16	0.26	0.33	0.49	0.77

P5 load table in STORAGE (= long-term load – 6 months to 10 years) – floating installation – Service class 1 (dry environment)					
Uniformly distributed load in kN/m ² - max. deflection l/200					
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)				
	P5 class (EN 312)				
	16	18	19	22	25
0.40	2.48	3.56	4.20	5.96	8.80
0.45	1.51	2.18	2.58	3.67	5.43
0.50	0.95	1.39	1.65	2.36	3.51
0.55	0.62	0.91	1.08	1.56	2.34
0.60	0.40	0.61	0.73	1.06	1.61
0.65	0.26	0.41	0.49	0.73	1.12
0.70	0.17	0.27	0.34	0.51	0.79
0.75	0.10	0.18	0.22	0.35	0.56
0.80	0.05	0.11	0.14	0.24	0.40
0.85	0.02	0.06	0.09	0.15	0.28
0.90		0.02	0.04	0.09	0.19
0.95				0.05	0.12
1.00				0.01	0.07

P5 load table in case of ACCESS (= instantaneous load) - floating installation - Service Class 2 (wet environment)					
Uniformly distributed load in kN/m ² - max. deflection l/300					
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)				
	P5 class (EN 312)				
	16	18	19	22	25
0.40	7.55	10.78	12.70	17.96	26.40
0.45	4.67	6.69	7.88	11.15	16.42
0.50	3.03	4.35	5.13	7.27	10.72
0.55	2.04	2.93	3.46	4.92	7.27
0.60	1.41	2.03	2.41	3.43	5.08
0.65	0.99	1.44	1.71	2.45	3.65
0.70	0.71	1.04	1.24	1.78	2.67
0.75	0.51	0.76	0.91	1.32	1.99
0.80	0.37	0.56	0.68	0.99	1.50
0.85	0.27	0.41	0.50	0.74	1.14
0.90	0.19	0.30	0.37	0.56	0.87
0.95	0.13	0.22	0.28	0.42	0.67
1.00	0.09	0.16	0.20	0.32	0.52

P5 load table in STORAGE (= long-term load - 6 months to 10 years) - floating installation - Service class 2 (wet environment)					
Uniformly distributed load in kN/m ² - max. deflection l/200					
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)				
	P5 class (EN 312)				
	16	18	19	22	25
0.40	1.33	1.92	2.28	3.25	4.82
0.45	0.79	1.16	1.38	1.97	2.95
0.50	0.48	0.72	0.86	1.24	1.88
0.55	0.29	0.45	0.55	0.80	1.23
0.60	0.18	0.28	0.35	0.52	0.82
0.65	0.10	0.17	0.22	0.34	0.55
0.70	0.05	0.10	0.13	0.22	0.37
0.75		0.04	0.07	0.13	0.24
0.80			0.02	0.07	0.15
0.85				0.02	0.08
0.90					0.03
0.95					
1.00					

Load Tables for P7 panels

P5 load table in case of ACCESS (= instantaneous load) – floating installation – Service Class 1 (dry environment)						
Uniformly distributed load in kN/m ² - max. deflection l/300						
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)					
	P5 class (EN 312)			P7class (EN 312)		
	9	10	12	15	18	22
0.40	1.92	2.65	4.62	10.93	18.95	33.03
0.45	1.17	1.63	2.85	6.78	11.78	20.56
0.50	0.75	1.04	1.84	4.41	7.69	13.43
0.55	0.49	0.69	1.23	2.98	5.21	9.13
0.60	0.33	0.46	0.84	2.07	3.64	6.40
0.65	0.22	0.32	0.59	1.47	2.61	4.60
0.70	0.15	0.22	0.41	1.07	1.90	3.38
0.75	0.09	0.15	0.29	0.78	1.41	2.53
0.80	0.06	0.10	0.21	0.58	1.06	1.92
0.85	0.03	0.06	0.14	0.43	0.80	1.47
0.90		0.03	0.09	0.32	0.61	1.14
0.95		0.01	0.06	0.24	0.47	0.88
1.00			0.03	0.17	0.36	0.69

P5 load table in STORAGE (= long-term load – 6 months to 10 years) – floating installation – Service class 1 (dry environment)						
Uniformly distributed load in kN/m ² - max. deflection l/200						
SPACE BETWEEN BEAMS (m)	NOMINAL THICKNESS (mm)					
	P5 class (EN 312)			P7 class (EN 312)		
	9	10	12	15	18	22
0.40	0.42	0.60	1.07	3.65	6.37	11.15
0.45	0.24	0.34	0.63	2.24	3.93	6.90
0.50	0.13	0.20	0.38	1.43	2.53	4.47
0.55	0.07	0.11	0.23	0.94	1.69	3.01
0.60		0.06	0.14	0.63	1.15	2.08
0.65				0.43	0.80	1.46
0.70				0.29	0.56	1.05
0.75				0.19	0.39	0.76
0.80				0.12	0.27	0.55
0.85				0.07	0.19	0.40
0.90				0.04	0.12	0.28
0.95					0.07	0.20
1.00					0.03	0.13

References



Building applications are more and more demanding and often require an individual approach. SpanoTech is a division of Unilin and provides specialized construction solutions in the areas of:

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- Thermal insulation
- Fire safety
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