



# fermacell

## FERMACELL Powerpanel H<sub>2</sub>O for Wet & Moisture affected areas

Powerpanel H<sub>2</sub>O is a  
cement based board  
from FERMACELL.

### Board Characteristics

|                 |                               |                        |
|-----------------|-------------------------------|------------------------|
| Board Thickness | 12.5 mm                       |                        |
| Board Sizes     | 1000 x 1200 mm                | 50 sheets/pallet       |
|                 | 2000 x 1200 mm <sup>(1)</sup> | 30 sheets/pallet       |
|                 | 2600 x 1200 mm                | 30 sheets/pallet       |
|                 | 3000 x 1200 mm <sup>(1)</sup> | 30 sheets/pallet       |
| Weight          | 1000 kg/m <sup>3</sup>        | 12.5 kg/m <sup>2</sup> |

<sup>(1)</sup> delivery date on request

Powerpanel H<sub>2</sub>O is a cement-bonded light-concrete construction board with a laminated structure, reinforced on both sides beneath the surface with an alkali-resistant glass fibre mesh (5 mm x 5 mm). Powerpanel H<sub>2</sub>O is non-combustible and conforms to construction material class A1.

Powerpanel H<sub>2</sub>O is the new water resistant board for wet rooms. It has many advantages, whether it is used in domestic bathrooms with showers, in toilets, hospitals in public or business establishments or when subject to chemicals in commercial kitchens and industrial areas. Powerpanel H<sub>2</sub>O can also be used in swimming pools. In this instance, special treatment of steel profiles is required. Please call for more details.

The FERMACELL Waterproofing sealing system consisting of a primer, a waterproofing layer and a flexible sealing strip can be used to further enhance the performance of the whole system, whether it be for FERMACELL or for Powerpanel H<sub>2</sub>O. The FERMACELL leaflet "Waterproofing Systems" addresses the requirement for wet rooms, surface preparation, sealing systems and detailed solutions.

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## Board storage and transport

Powerpanel H<sub>2</sub>O boards are stacked horizontally and delivered on pallets. The boards should be stored flat on a level surface. Storage on end can lead to bowing of the boards and damage to edges.

If a stack of boards is laid on a floor then the load bearing capacity of the floor must be observed.

Due to their resistance to frost and water the boards may be stored in the open. Care should be taken to protect the boards from dirt, dust and contaminated water as this may compromise the effectiveness of further waterproofing or decorative treatments.

Horizontal transportation of boards is possible with forklift trucks or other panel transporters. Single sheets must be transported on end. Manual lifting of the sheets is made easier with panel lifting/transporting tools. If these tools are not available operators should wear gloves.

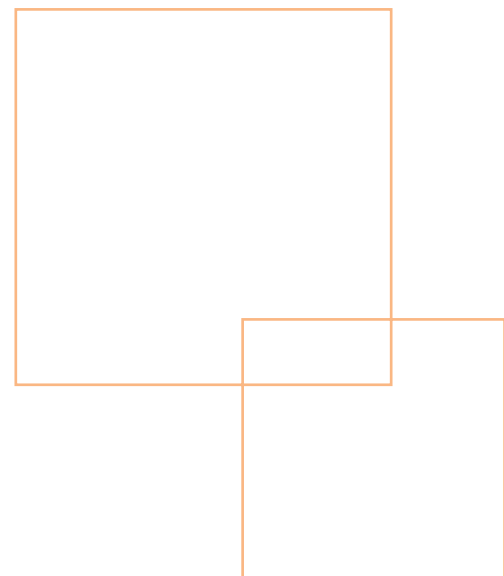
Please contact your supplier regarding the return of wooden pallets.

## Building site conditions

Just like all other building materials FERMACELL Powerpanel H<sub>2</sub>O boards are subject to movement under the influence of temperature and moisture. To ensure fault free drying of walls and ceilings the following process conditions must be followed:

Powerpanel H<sub>2</sub>O boards and accessories must be protected against moisture and especially rain. Dry building materials that have become wet for a short period must not be used until they are completely dry again. The sheet materials must be stored flat on a smooth surface. Damaged materials must not be used for building work.

Powerpanel H<sub>2</sub>O boards and accessories can be used at a relative air humidity of  $\leq 80\%$ . For technical reasons, gluing of Powerpanel H<sub>2</sub>O boards must take place at relative air humidity of  $\leq 80\%$  and a room and material temperature of at least  $+5^{\circ}\text{C}$ . The adhesive temperature should be  $\geq +10^{\circ}\text{C}$ . The dry building materials should be adapted to the ambient room temperature, which should not change substantially for 12 hours following the gluing process. Lower temperatures and relative air humidity lengthen the curing times. Gas burner heating can cause damage due to the formation of condensation. This is particularly true for cold internal areas with bad ventilation. Fast, abrupt heating should be avoided as this can cause thermal shock.



## Cutting

Powerpanel H<sub>2</sub>O boards should be cut with a standard rail-guided hand-held circular saw, preferably a plunge saw type. For accurate and sharp cuts we recommend the use of tungsten tipped saw blades.

Vacuum extraction should be provided when using circular saws. The amount of dust can be minimized by using saw blades with fewer teeth (i.e. ripping blades) and a reduced cutting speed.

Curves and angled cuts can be achieved with a jigsaw or with a core drill.

If no hand-held circular saw is available then Powerpanel H<sub>2</sub>O boards can be cut with a knife as follows: using a Stanley knife, lightly score the surface in a straight line, ensuring that the mesh is cut. Place the cut line over a supported edge (i.e. the edge of the pallet) and break the board by pushing down evenly along the cut. Then cut the mesh on the back side of the sheet.

## Sub-structure

Steel studs should be a minimum base gauge steel and have a 50 mm fixing face. The steel studs should be inserted vertically into the head & base track attached to the ceiling and floor. The studs should be inserted loosely into the head and base tracks; these must NOT be mechanically fixed. When boarding commences, the stud can then be set to the correct centres.

The studs should extend a minimum of 15 mm into the head track (nominally a 40 mm head track). For deep flange head tracks and accommodation of deflection head details, please call our Technical Helpline on 0870-6090306.

Timber studs should be mechanically fixed to the head and base tracks. For timber studs we recommend a 50 mm fixing face, however a 38 mm CLS timber may be used as the joint is glued.

**Note:**  
When steel studwork is used, the stud and track profiles must not be fixed or mechanically connected in any way.





Apply joint adhesive  
to the middle of the  
board edge

Staple or screw to the sub-structure

Remove excess adhesive  
once cured

## Fixing/Mounting

The boards are fixed to steel or timber studs with FERMACELL Powerpanel screws at a spacing of  $\leq 250$  mm without the need to pre-drill the holes.

Additionally, the boards may be stapled to timber with staples spaced at 200 mm maximum centres.

For rooms with increased requirements for corrosion protection, such as swimming pools, saunas, industrial kitchens or dairies, steel profiles with corrosion protection according to DIN EN 13964 for moisture-proof rooms should be used. The joining material should also conform to the requirements for the corresponding corrosion protection instructions. Call the FERMACELL technical support for further details 0870-6090306.

## Jointing

When jointing Powerpanel H<sub>2</sub>O both horizontal and vertical board joints are glued using FERMACELL joint-stick. The horizontal joints should be offset by a minimum of 400 mm; i.e. no cross joints. Vertical joints must always be formed over studwork and horizontal joints should be backed. For glued joints, factory cut board edges must be used. The factory prepared FERMACELL Powerpanel H<sub>2</sub>O boards used for installation must be sharp-edged and absolutely straight. When making the glued joint you must be absolutely certain that the board edges are dust free and the line of adhesive is placed in the middle of the board edge and not on the studs. It is important that when the two boards are pushed tightly together the adhesive fills the joint completely and is visible in the completed joint.

For double layer boarding Powerpanel H<sub>2</sub>O boards, the joints between the two layers should be offset by a minimum of 200 mm. Jointstick jointing is only required on the outer layer of board. Sub layers are dry butted. The adhesive usage is 20 ml FERMACELL joint adhesive per metre of board joint.

The adhesive hardens after 12–36 hours according to the room temperature and air humidity, after which the excess adhesive should be removed completely. This can be done with a paint scraper.

**Note:**  
The maximum  
width of the joint  
must not exceed  
1 mm.

## Partitions with Powerpanel H<sub>2</sub>O

In wall areas 12.5 mm thick Powerpanel H<sub>2</sub>O boards are fixed to stud-work set at maximum 600 mm centres.

The first Powerpanel H<sub>2</sub>O board is fixed to the stud profile with FERMACELL Powerpanel screws, starting at the open stud profile side. For wooden studs the first layer of panels is fixed with staples or screws. Then apply the FERMACELL jointstik adhesive in a flat continuous bead to the middle vertical board edge.

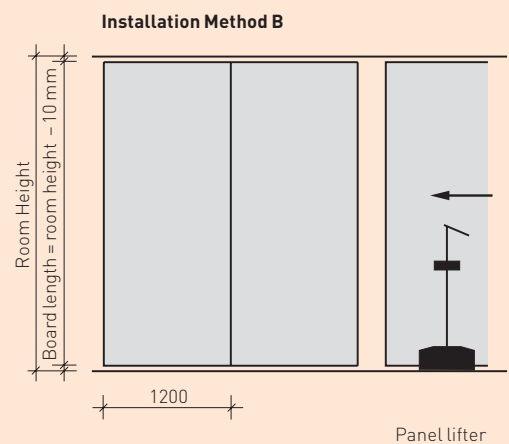
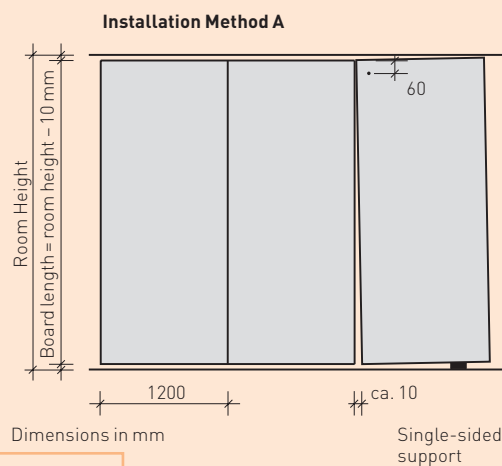
The second Powerpanel H<sub>2</sub>O board is placed next to the first board with the boards tight at the top and a gap of 10–15 mm at the base to create a wedge-shaped gap.

For this the board length must be about 10 mm shorter than the room height. Place a packer under the board to hold it in this position, then fix the board to the vertical stud about 60 mm below the upper edge with a FERMACELL Powerpanel screw or for a wooden stud suitable screw or staple.

When the wedge is removed the weight of the second board forces it against the first. In this way the adhesive is tightly compressed and the joint sealed. Fix the board in a continuous line from the top to the bottom (as installation method A). If required, fixing of the boards can also be carried out with a panel lifter. Using this method also requires sufficient pressure against the edge of the Powerpanel H<sub>2</sub>O board on the joint adhesive to ensure a tight butt-joint. In this case fix from the centre of the boards outwards to the edges (as installation method B).



Fitting of Board



## Ceilings with Powerpanel H<sub>2</sub>O

For ceilings the spacing of the main sub-structure should be selected according to the table below. Ensure that the joists or other load-bearing structure are capable of supporting the weight of the ceiling without excessive deflection (1/360 maximum). The maximum spacing for fixing supports for Powerpanel H<sub>2</sub>O in ceilings is 40 x board thickness. i.e for 12.5 mm board, supports should be at maximum 500 mm centres.



| Sub-structure                                    |                       | Permitted support width<br>in mm <sup>1)</sup> For Single Layer<br>Boarding to 15 kg/m <sup>2</sup> |
|--|-----------------------|---|
| <b>Steel Profile</b>                             |                       |   |
| Basic Profile                                    | CD 60 x 27 x 06       | 900   |
| Load Bearing Profile                             | CD 60 x 27 x 06       | 1000  |
| <b>Timber battens (width x height) (mm x mm)</b> |                       |   |
| Basic batten,<br>Directly Fixed                  | 48 x 24               | 700   |
|  | 50 x 30               | 850   |
|  | 60 x 40               | 1000  |
| Basic batten,<br>Suspended                       | 30 x 50 <sup>2)</sup> | 1000  |
|  | 40 x 60               | 1200  |
| Load bearing batten                              | 48 x 24               | 700   |
|  | 50 x 30               | 850   |
|  | 60 x 40               | 1100  |

<sup>1)</sup> Support width means the distance between the suspension points for basic profiles or basic battens and the centre distance of the basic profile or the basic batten for load bearing profiles or battens..

<sup>2)</sup> Only in relation to load bearing battens of 50 mm width and 30 mm height.

## Movement joints (continuous separation of the structure)

Movement joints in FERMACELL Powerpanel H<sub>2</sub>O constructions are required at the same points where movement joints are required in buildings (building shell). They must be able to take up the same amount of movement. It is essential that both the FERMACELL Powerpanel H<sub>2</sub>O boarding and the sub-structure are separated.

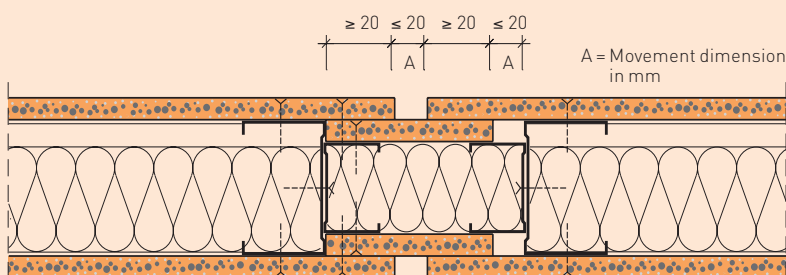
### Timber sub-structure:

Separation of boards: A movement gap must be left between two boards of Powerpanel H<sub>2</sub>O to allow for differential movement when there is a change of air humidity, there must be an 8 mm gap in the boarding (this must be an open panel joint, not filled, not glued). Ideally the gap should occur at a point that is not visible, e.g. behind a wall T-junction. These should be set where possible.

### Metal sub-structure:

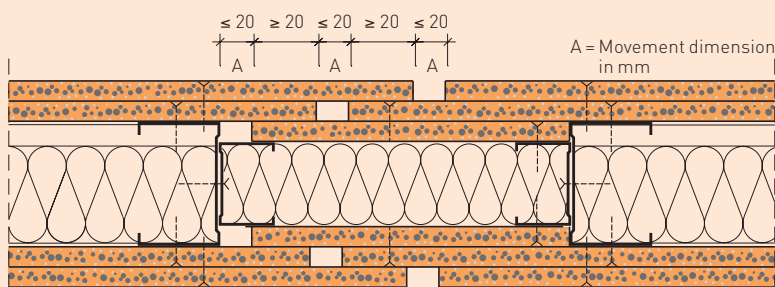
Due to the expansion and contraction in Powerpanel H<sub>2</sub>O caused by changes in temperature and humidity and slightly different movement caused in metal stud-work, an expansion gap is required in walls and ceilings at a maximum of every 8 metres.

Details of expansion joints are shown in the adjacent drawings. Note that expansion joints which use strips of Powerpanel H<sub>2</sub>O will maintain the fire and acoustic performance of the wall and ceiling constructions. Where infill profiles are used, guidance should be obtained from the manufacturer.



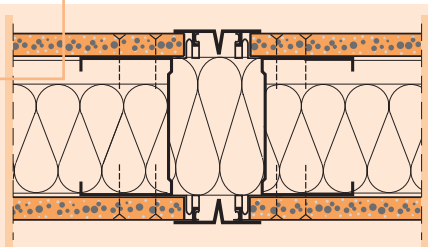
**FERMACELL Powerpanel H<sub>2</sub>O partition wall single layer boarding**

**Movement joint with batten strips**

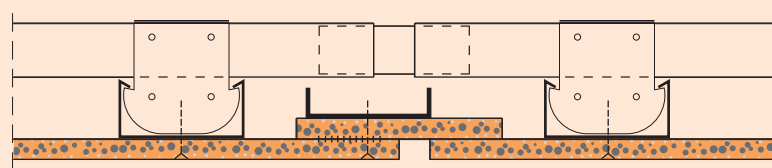


**FERMACELL Powerpanel H<sub>2</sub>O partition wall double layer boarding**

**Movement joint with batten strips**



**FERMACELL Powerpanel H<sub>2</sub>O partition  
movement joint with additional profile**



**FERMACELL Powerpanel H<sub>2</sub>O ceiling structure movement**

**joint with single layer boarding**

**Batten strips glued on one side and secured with screws**

| Specification                                    |   |
|--|---|
| Building material class:                         | Non-flammable, A1 according to EN 13501-1 |
| Dimension tolerances: L, B                       | ± 1 mm                                    |
| Thickness tolerance:                             | ± 0,5 mm                                  |
| Equalization humidity:                           | approx. 5 %                               |
| Water vapour diffusion resistance figure $\mu$ : | 56 according to DIN EN 12572              |
| Thermal conductivity $\lambda_{10, tr}$ :        | 0.173 W/(mK) according to DIN EN 12664    |
| Heat transfer resistance $R_{10, tr}$ :          | 0.07 (m²K)/W according to DIN EN 12664    |
| Specific heat output $c_p$ :                     | 1000 J/(kgK)                              |
| Bending:   | approx. 6,0 N/mm²                         |
| E module bending:                                | approx. 5200 N/mm²                        |
| pH:  | approx. 10                                |

## Surface

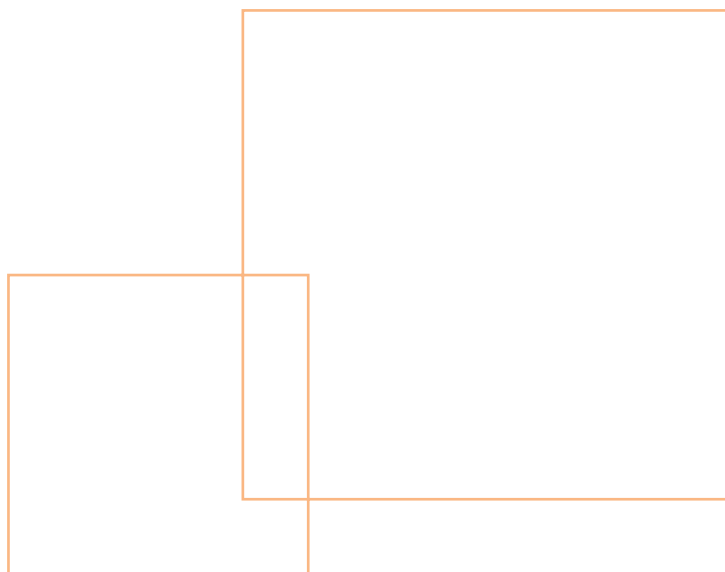
The most popular surface finish for Powerpanel H<sub>2</sub>O is tiling.

For showers and permanently wet areas we recommend the use of the FERMACELL Waterproofing system. For further information on the FERMACELL Waterproofing system, please call our Technical Hotline on 0870-6090306.

In areas where Powerpanel H<sub>2</sub>O does not come into direct contact with water, but is used due to high air humidity and not covered in tiles, then the adhesive joints and junction areas should be scraped flush and the area over the joints and screw heads should be flush filled with Powerpanel H<sub>2</sub>O Overcoat (surface plaster).

Alternatively the whole surface can be skimmed with Powerpanel H<sub>2</sub>O Overcoat. Prior to skimming, Powerpanel H<sub>2</sub>O should be sealed with FERMACELL Board Sealer or a sand-based board sealer to give a key.

A render can also be applied to Powerpanel H<sub>2</sub>O. The board should be sealed as stated previously and the render layer should not exceed 4 mm. FERMACELL lightmortar can also be used a render finish in internal areas.





## Construction

| Designation              | Structure | Wall-<br>thickness | Sub-<br>structure | FERMACELL<br>boarding                     | Mineral<br>wool         | Maximum<br>Wall Height | Rating R <sub>w</sub> | Sound<br>Rating     |
|--------------------------|-----------|--------------------|-------------------|---|-------------------------|------------------------|-----------------------|---------------------|
|                          |           | [mm]               | Stud Size         | [mm]                                      | [mm]/ kg/m <sup>2</sup> | [mm]                   | [dB]                  |                     |
| 1S11 H <sub>2</sub> O    |           | 100                | 75 x 0.6          | 1 x 12.5 mm<br>H <sub>2</sub> O per side  | 60/27                   | 4500                   | 49                    | F 30-A<br>(EI 30)   |
|                          |           | 125                | 100 x 0.6         |   |                         | 5000                   |                       |                     |
| 1S11 H <sub>2</sub> O-FC |           | 100                | 75 x 0.6          | 1 x 12.5 mm<br>H <sub>2</sub> O and       | 60/27                   | 4500                   | 51                    | F 30-A<br>(EI 30)   |
|                          |           | 125                | 100 x 0.6         | 1 x 12.5 mm<br>Gypsum fibre board         |                         | 5000                   |                       |                     |
| 1S29 H <sub>2</sub> O-FC |           | 110                | 75 x 0.6          | 1 x 12.5 mm<br>H <sub>2</sub> O and       | 60/27                   | 4500                   | 56                    | F 30-A<br>(EI 30)   |
|                          |           | 135                | 100 x 0.6         | 1 x 12.5 mm + 10 mm<br>Gypsum fibre board |                         | 5000                   |                       |                     |
| 1S31 H <sub>2</sub> O    |           | 125                | 75 x 0.6          | 2 x 12.5 mm H <sub>2</sub> O              | 60/27                   | 5500                   | 57                    | F 120-A<br>(EI 120) |
|                          |           | 150                | 100 x 0.6         |   |                         | 6500                   |                       |                     |
| 1S31 H <sub>2</sub> O-FC |           | 125                | 75 x 0.6          | 1 x 12.5 mm<br>Gypsum fibre board +       | 60/27                   | 5500                   | 60                    | F 120-A<br>(EI 120) |
|                          |           | 150                | 100 x 0.6         | 1 x 12.5 mm<br>H <sub>2</sub> O per side  |                         | 6500                   |                       |                     |
| 1H11 H <sub>2</sub> O    |           | 85                 | Wood<br>40 x 60   | 1 x 12.5 mm<br>H <sub>2</sub> O per side  | 60/27                   | 3100                   | 42                    | F 60-B<br>(EI 60)   |
|                          |           | 105                | Wood<br>40 x 80   |   |                         | 4100                   |                       |                     |

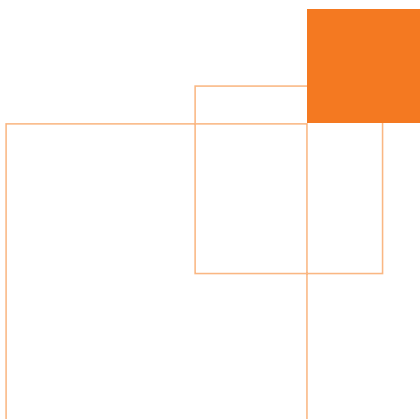
For mixed structures using FERMACELL Powerpanel H<sub>2</sub>O and FERMACELL Gypsum fibre boards the fixing instructions for FERMACELL Gypsum fibre boards must also be observed.

Load carrying capacity of Powerpanel H20 using a proprietary cavity fixing as follows:

- Single boarded - 40 kg
- Double boarded - 50 kg.

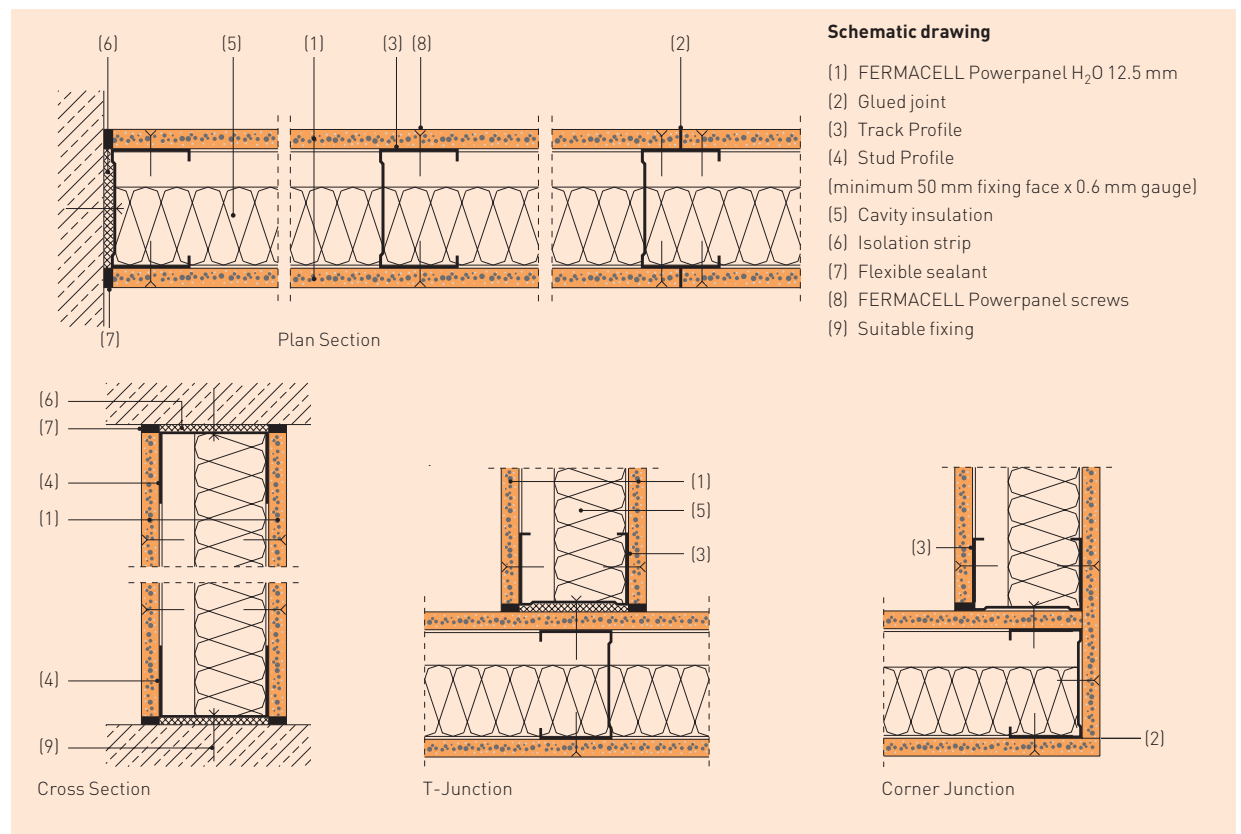
Load carrying capacities incorporate a safety factor of 2.

The indicated load values can be added together, if the fixings are spaced at  $\geq 500$  mm or separated by a stud. For shorter fixing spacing, the load per fixings should be reduced by 50 %. The sum of single loads for walls should not exceed 1.5 kN/m.



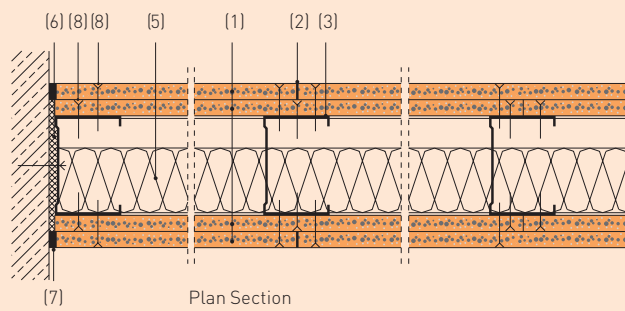
### FERMACELL Powerpanel H<sub>2</sub>O single layer partition wall

Fire protection: F 30-A, Soundproofing:  $R_w = 49$  dB, Wall thickness: From 100 mm



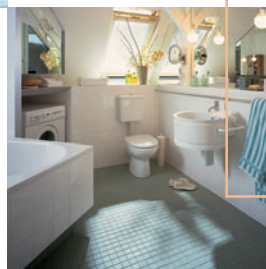
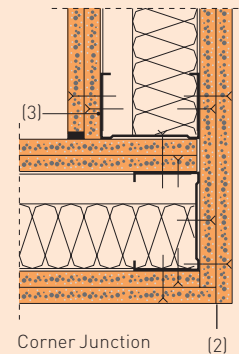
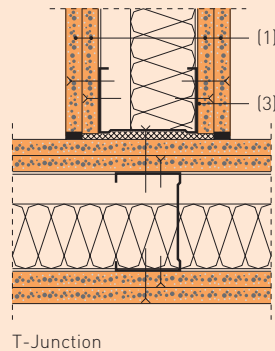
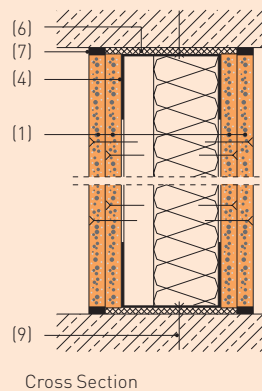
## FERMACELL Powerpanel H<sub>2</sub>O double layer partition wall

Fire protection: F 120-A, Soundproofing:  $R_w = 57$  dB, Wall thickness: From 125 mm

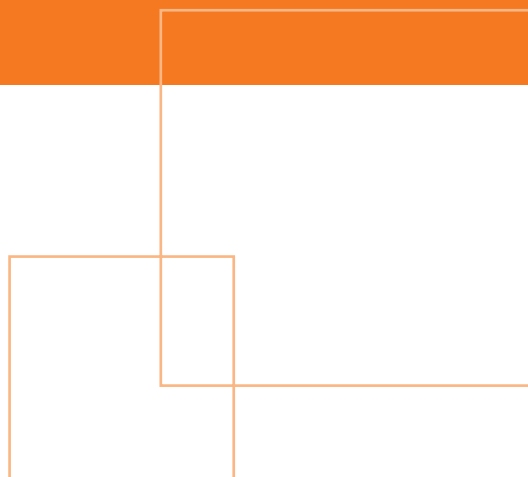


### Schematic drawing

- (1) FERMACELL Powerpanel H<sub>2</sub>O 12.5 mm
- (2) Glued joint
- (3) Track Profile
- (4) Stud Profile  
(minimum 50 mm fixing face x 0.6 mm gauge)
- (5) Cavity insulation
- (6) Isolation strip
- (7) Flexible sealant
- (8) FERMACELL Powerpanel screws
- (9) Suitable fixing



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